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Articulation Instruments between Territorial Planning and Participative Budget
URB-AL R9-A6-04

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CREDITS

Municipal Prefecture of Belo Horizonte

Municipal Executive

Fernando Damata Pimentel
Municipal Prefect

Julio Ribeiro Pires
Municipal Secretary for Planning, Budget and Information

Ana Luiza Nabuco Palhano
Assistant Secretary for Municipal Planning

Technical Team

Popular Participation Participative Budget Coordination

Claudia Julio Ribeiro
Emilia Carolina
Gilma Carmelia Alves de los Santos
Julio Millan Moraes
Maria Auxiliadora Gomes
Paula Romanelli
Rosana Bacarini
Saulo Tiago Rodrigues Motta

SMPL Administrative and Financial Management

Maria do Carmo Souza Pena
Manoel Teixeira Ornelas Filho

Internal Coordination

Marcos Ubirajara de Carvalho e Camargo
Maria Auxiliadora Gomes
Rosana Bacarini

Research and Production of Sourcebook

Marcos Ubirajara de Carvalho e Camargo
Maria Auxiliadora Gomes

Technical Consultant

Yves Cabannes - Development Planning Unit, University College, London

External Partner

Jaime Vasconez - CIGU – International Center for Urban Management

Editing and layout

Lourdes Saavedra / CIGU
Mauricio Rojas / IMPORCOPIAS

Printing of texts / IMPORCOPIAS

Binding / ARTES GRAFICAS SEÑAL

Translation / Isabel Aguirre

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CONTENTS

I. PRESENTATION

The city of Belo Horizonte acts as coordinator for the project URB-AL R9-A6-04, "Articulation Instruments between Territorial Planning and Participative Budget", in partnership with the cities of Ariccia in Italy, Bella Vista in Argentina, Cordoba in Spain, Guarulhos in Brazil, and the International Centre for Urban Management – CIGU in Ecuador as external partner, within Network Nº 9, Local Finance and Participative Budgets.

The general goal of this project, 70% of which is co-financed by the URB-AL Program, sponsored by the European Commission, is to identify, analyze, share and disseminate practices that seek to articulate city planning, territorial organization and the Participative Budget process. During its implementation we sought to produce and share knowledge and experiences on the methodologies developed to achieve this articulation, as well as to measure the results obtained and the steps taken for the development of these experiences.

To this end, we created a networking space among partner cities, which have different experiences. This process was divided in several stages and involved holding work meetings for the production of case studies and technical teaching materials on the issues of interest.

This Sourcebook presents a systematization of the knowledge accumulated by the city of Belo Horizonte, which has an experience in Participative Budget practices dating back thirteen years. For the population of the city, this meant the approval of 1,193 demands of projects, 821 of which have already been completed, with the participation of more than half a million residents of the municipality in the decision-making process.

Concerning the benefits and the dimension of the urban inclusion that Participative Budget fosters in the city, the work developed in the scope of this project seeks precisely to develop a series of instruments to evaluate the benefits for the population. It is also in this sense that we propose creating a system of indicators to enable this evaluation, identifying where the funds are applied, how they are applied and what are the results reflected in the variables revealed by the study.

Consequently, the development of the ISAVC methodology – Indicator of Socio-environmental Constraints for Life in the City – in Belo Horizonte is presented in two modules. The first develops a methodology for the analysis of the quantitative aspects of the impact of the work of the Participative Budget, measuring the populations benefited by the proximity of the projects, with emphasis on the aspect of coverage of benefits. The second develops a methodology for the analysis of the qualitative aspects of the impact of Participative Budget projects, identifying beneficiary populations with emphasis on the aspects of social relevance and effective investment in priorities.

Based on the theoretical model developed, it is quite clear that the ISAVC obtained from the factorial score is a synthetic indicator that represents the latent dimensions revealed by the factor analysis of a multidimensional set of variables. This means that the use of the results generated by the ISAVC and presented here is limited to the instrumentalization of the planning of comprehensive cross-sectoral actions, closing the cycle supervision→monitoring→control→action in the development of a plural policy. This indicator should not be understood or used in detriment of the plurality of the factors it summarizes. In other words, the indicator should be discussed considering the initial dimensions it includes, aiming sectoral policies to include them in the search for comprehensive, effective and sustainable solutions to the complex socio-environmental problems that affect quality of life in most Brazilian cities.

To summarize, an indicator like the ISAVC does not target projects or other isolated interventions, but rather the need to adjust sectoral actions, which is the exclusive role of planning. It also reflects the outcome of past actions, feeding information back to the planning process itself, and also becoming a monitoring and control instrument.

We hope that this sourcebook will contribute to the development of governmental practices with citizen participation, and we are thankful for the support given by the URB-AL Program sponsored by the European Commission, and by all the teams of partner cities and the external partner.

Maria Auxiliadora Gomes
Coordinator, URBAL R9-A6-04 Project
Popular Participation Coordinator
Secretariat for Municipal Planning
Prefecture of Belo Horizonte

I. INTRODUCTION

The production and dissemination of this Sourcebook seeks three objectives.

The first objective is to present the Participative Budget experience developed by the city of Belo Horizonte, taking as reference the articulation between popular participation in public management and urban planning promoted by the city. In this sense, we tried to consider and report the main aspects inherent to the design of the PB, in line with the existence and development of plans and programs on which the actions and initiatives taken in the implementation of municipal policies are based.

The second and most important objective of this work is to present, in the context of this experience, a methodology created for the development of an instrument to measure the impact of priority investments through Participative Budget.

The third objective is to meet the commitment of producing one of the expected outcomes of the common Project URB-AL, type A, Thematic Network Nº 9 - Public Finance and Participative Budgets, which addresses the subject "Articulation Instruments between Territorial Planning and Participative Budget".

II. GENERAL INFORMATION

Belo Horizonte, a planned city and the third most populated metropolis of Brazil, was inaugurated in 1897. It extends over an area of 330.90 km^2, at an altitude of 858 meters. The capital of the State of Minas Gerais, Belo Horizonte is a city of contrasts, with some areas that have high quality of urban life indexes and other areas with serious social and also urban problems. The IDH, the municipal Human Development Index, is 0,839, ranking 71st in the country's overall IDH. Belo Horizonte includes the Metropolitan Region and 33 municipalities and, in this context, it is affected by all the challenges raised by conurbation and other problems inherent to metropolitan regions regarding provision of essential services and basic infrastructure. According to figures provided by the United Nations Development Program - UNDP - and the João Pinheiro Foundation, the Metropolitan Region of Belo Horizonte registered a fall in the percentage of extremely poor residents, although the result has not been homogeneous in all areas considered. The municipality is divided in nine Administrative Regions, and these Administrative Regions are in turn subdivided in 81 Planning Units. Belo Horizonte also has 248 *vilas, favelas* and housing developments. The total population is 2,350,564, accounting for 50% of the population of the Metropolitan Region, which totals 4,786,369. The population of Belo Horizonte is 100% urban and accounts for 12% of the population of Minas Gerais. Concerning socioeconomic conditions, the economically active population of the city totals 51%, the *per capita* GDP is 32,079.35 euros, and the average income is 285.71 euros. The main economic activity of the city is service provision. Other data that also imply great challenges for the city report 512,529 residents living in *vilas* and *favelas*, 230,000 residents without access to the sewage network, 10,650 families living in risk areas and 50,000 homeless households. Concerning urban transportation, 70% of all residents travel by bus, and unemployment affects 15.5% of the economically active population. Concerning social vulnerability, Belo Horizonte has 202,431 residents living below the poverty line.

III. SYSTEM AND INSTRUMENTS FOR PARTICIPATIVE PLANNING

Historically, Participative Budget in Belo Horizonte is the result of an initiative linked to city planning. As early as 1996, three years after its implementation, the Master Plan approved for the city foresaw the creation of Planning Units with the goal of establishing a benchmark for the distribution of PB resources in homogeneous areas.

The Master Plan became the main instrument for the comprehensive urban development policies of Belo Horizonte, insofar as it was developed to see the city as a whole in order to tackle its major challenges and potentials. It also aims at identifying the main interventions that are both required and feasible, and also the great coordinates for its development. These structural parameters, derived from the Master Plan, guide the decisions of the Participative Budget in the process of defining the investments that will be made, thus establishing an organic relation between the Participative Budget and the city's planning process.

The Master Plan also undergoes updating processes in debates held at the Municipal Urban Policy Council, which brings together several segments of civil society, and in other forums where urban policies are publicly debated, combining the various interests represented in the issues discussed and defined by this instrument.

From this major benchmark, linkages were established with other specific plans and programs regarding different areas of action of the municipality in the development of policies under its competence. These instruments play a key role in the organization and articulation of governmental actions and have differentiated coverage, scope, and validity.

In this context, the initial interrelations established between the Specific Global Plan for *Vilas* and *Favelas* – PGE - with the BH Citizen Program and the Participative Budget are also worth noting.

The first plan seeks to organize interventions in the informal city, with the goal of guiding integrated sectoral actions for the regularization and urban development of these areas. The plan is prepared with the participation of the local community; it includes a diagnosis, proposals, hierarchization, and identification of costs required by the solutions sought. The PGE addresses the legal, physical and social aspects of these areas and the decisions taken in it will guide the interventions that will be approved by the Participative Budget. If a locality participating in PB assemblies in these areas does not have a PGE, the funds required to execute a project are approved together with those assigned for the production of the plan, which precedes and guides the execution of the project.

The PGE is also a plan that has been systematically reformulated through discussions with the local population; it is always updated by the basic definitions emerging from this process. It is a plan that requires the participation of the local population in its development and its application, through local reference groups made of formal and informal community leaders, representatives of groups and entities present in the community and by the persons in charge of community services. The role of this focal group is to follow up the plan as it develops, to spread information about it among community members and also to represent them in the decisions of the group. It therefore embodies the active participation of the population in the local planning process, which has a significant weight on the reality of the *vilas* of Belo Horizonte. Nowadays there are 80 PGEs already completed or underway, or for which the contractual process is already in progress. This is a highly significant number and PGEs currently benefit some 200,000 people. The PGE is a strong instrument of coordinated interventions organized in close relationship with the Participative Budget process.

The BH Citizen Program became the municipal government's major initiative to combine essential social policies aimed at assisting the population living in the most vulnerable areas of the city, called "Priority Areas for Urban and Social Inclusion". The articulation and integration of this program with the Participative Budget process is materialized through a mechanism developed to foster the approval of interventions in these areas in the discussion process. This mechanism consists in attributing a score to pre-selected projects located in those areas. Different weights are given to each demand, in the sense of positive discrimination, in order to increase its possibilities of being approved, and thus enhance the urbanization of the area. With the development of the BH Citizen Program, the Prefecture of Belo Horizonte was able to extend the network of protection of the population residing in it, in line with the goals defined in its Pluriannual Government Action Plan – PBAG. On the other hand, the mechanism translates the effort of integrating social policies in their most diverse aspects, including, for example, food supply, social welfare, education, culture, sports, health, citizen rights, fighting child labor, as well as greater access by needy families to child education, income generation policies and professional qualification. These initiatives and results are reinforced by physical interventions in the areas of basic sanitation, opening and paving of access roads and other initiatives to develop these areas through the Participative Budget process. The huge advantage fostered by this integration is that it adds efficiency to the actions of the municipal administration in the achievement of the objectives of improving quality of life and lowering poverty rates in these areas.

This procedure has been applied in the last three cycles of the Participative Budget process and the result is that more than 60% of projects approved in recent years fell within these priority areas. This result also shows that the Participative Budget process is fully integrated with other municipal policies articulated by the BH Citizen Program, which in turn executes an integrated multisectoral policy within the administration. The BH Citizen Program, which promotes the social inclusion of families living in risk areas, has –as can be seen –strong links with the Participative Budget process.

The Environmental Recovery and Development Program of the Pampulha Basin – PROPAM –, as well as the Program to Recover the Natural River Beds of Belo Horizonte – DRENURBS – and the Municipal Sanitation Plan – PMS, articulated with the Participative Budget process, are also worth mentioning here. These plans play different roles in the organization of the city and include popular participation either in their development, updating or monitoring.

The goal of the Municipal Sanitation Plan is to articulate and coordinate the actions of COPASA, the operator of water and sewage services, with the correlated sectoral policies of drainage, solid waste and environmental remediation services. To guide this diagnosis, as well as to monitor the actions implemented in this area, the Prefecture of Belo Horizonte developed an indicator to compare access to water services, sewage collection and diversion, garbage collection, urban drainage, vector control, etc. This is made through the Environmental Health Index– ISA, which provides among its components the execution of projects approved by the PB.

PROPAM, a program managed by a council that includes members from the local community, has aimed the investments of the PB towards interventions provided and arranged hierarchically in the environmental remediation plan of the Pampulha basin. It is worth noting that the largest urban and architectural assemblage of the city is located here, and that it is considered of key significance in projects to develop its tourist potential.

Likewise, DRENURBS, the Master Drainage Plan, whose goal is to recover waterways, environmental sanitation of valley floors and urban drainage, contains a proposal to prioritize interventions in water basins considered by the program, which also guides the allocation of funds through the PB.

The Participative Budget also considers sectoral guidelines for the entire urban and social areas, thus asserting itself as a key instrument of articulation of these processes already implemented in the city. Each Secretariat or sectoral administrative body that has an interface with the PB is called upon to formulate, update and systematize the guidelines corresponding to their areas of intervention. Under the coordination of the Planning Secretariat, suggestions made by the communities are examined in light of these guidelines, thus ensuring the observance of possible restrictions or sanctions based on objective diagnoses and criteria regarding the issues in discussion.

On the other hand, this also means a challenge for these processes and actions to develop greater articulation among government bodies, fostering more conversations and dialogue among them. The Participative Budget includes this challenge in its formulation, in its dynamic and its methodology, and thus it fulfills the key role of making the city discuss planning in a more integrated and participative fashion, using the major instruments and references already established.

These are the main instruments that the experience of Belo Horizonte presents as a key instrument to integrate its policies, which act in the consolidation of city planning through the participation of the population in the allocation of funds, the production and execution of guiding principles generated by plans, programs and guidelines, either directly related with the Participative Budget or with the decisions taken in its space of definitions. **Figure I** below shows a scheme of these articulations.

Figure I

Source: SMAPL- PBH

IV. CHANNELS AND SPACES FOR PARTICIPATION

This topic addresses the issue of participation: which spaces and which channels of participation exist in the city regarding Participative Budget, even through a broader management system.

The shared municipal policy management system includes more than 80 councils and commissions of municipal, regional or local coverage. These commissions and councils are general or thematic in nature, or even also sectoral. One of them is the Municipal Urban Policy Council, which deals with broader issues related with the city as a whole. Sectoral councils in different areas, such as health, education, welfare, etc., each with its specific attributions, play the role of talking partners and monitor decisions made in broader forums, for example, at Sectoral and Thematic Conferences. The Regional Transportation Commissions, for instance, play an important role in the regulation of urban transportation in each region, as well as in the definition of the transportation demands of the local population. For the last 13 years, the Participative Budget Follow-up and Control Commissions - COMFORÇA – have quite effectively worked in the follow-up and control of the execution of projects approved by the PB regarding compliance with deadlines of projects identified and funds required. District Commissions and Local Health Commissions, Regional Commissions and also Local Social Welfare Commissions, among several others that make up this network of participation, are also worth highlighting. Thus, this shared management system is organized as an all-encompassing umbrella, both from the viewpoint of the huge number of existing levels and from their actions within the city as a whole, in the regions and in the local sphere, closer to the resident population. It also has an organic composition and authority that gives it significant power in the regulation and control of policies and also in the proposal of initiatives and policies that will be implemented in each field.

The Housing Council also participates directly in the Participative Budget process. It has the power to formulate and follow up the housing policy developed by the municipality and the decisions taken regarding the Housing Participative Budget (HPB). This implies discussing funds that will be invested and rules and criteria that will be adopted in public debates with organized groups of homeless people who will benefit from the housing units built by the HPB.

The implementation in 2006 of the Digital Participative Budget, which assigns specific funds for the identification of projects through the Internet, resulted in the incorporation of new sectors of the city in the selection process already implemented by the Regional PB and by the Housing PB. COMFORÇA took part in the selection of the projects that were put to vote. The Prefecture presented five projects for each Administrative Region. COMFORÇA chose four from each, for a total of 36 projects, and these were put to vote in the Internet,. Nine were chosen by the population to be executed by the Prefecture, at a ratio of 1 (one) per Administrative Region.

V. DIMENSIONS OF THE PARTICIPATIVE BUDGET EXPERIENCE IN BELO HORIZONTE

A. TERRITORIAL DIMENSION

Participative Budget in Belo Horizonte is organized on a territorial basis comprising three levels of aggregation based on the division of the city in homogeneous areas. These are made of 81 Planning Units – PUs, which are in turn grouped in 41 Sub-Regions within the boundaries of the 9 Administrative regions, as shown in **Table II** below.

Table II

Name of Administrative region	Number of Sub - Regions	Number of PUs	Number of Neighborhoods / *Vilas*
Barreiro	05	08	66
Centro - Sur	03	13	43
Leste	04	09	45
Nordeste	06	08	59
Noroeste	05	10	68
Norte	04	08	50
Oeste	04	07	41
Pampulha	04	10	46
Venda Nova	06	08	47
TOTAL 09	41	81	465

Source: SMAPL- PBH

The distribution of resources is made according to the territorial base represented by the PUs, taking into account the resident population and the Urban Quality of Life Index– ICVU. This index expresses access to urban goods and services in these areas, related with 11 variables: service supply, social welfare, culture, education, sports, housing, urban infrastructure, environment, health, urban safety, and urban services. Thus we have a distribution of the resources in direct proportion to the population and in inverse proportion to the ICVU, which means that more populated areas with lower ICVU will benefit from greater resources.

PB regulations also ensure that with this territorial approach at least one project will be approved in each Sub-region and that there will be at the most one indication per neighborhood to ensure a better distribution of the projects, preventing their concentration based on possible factors that may influence the results. This characteristic also allowed creating the Special Sub-Region, with a higher ICVU, with the goal of incorporating middle class sectors, maintaining also the logic of the allocation of funds favorably in more underprivileged areas. The creation of these Sub-Regions emerged from the realization that residents in these areas did not participate or participated too little and, when they did, they were unable to have their demands approved. With the objective of including areas with higher ICVU, the Prefecture proposed a debate to assign them specific resources, so that the population living there may also make local requests for works, including planning and even urbanization or infrastructure projects. With this, the more effective incorporation of sectors of the population that did not participate in the PB was a way of reinforcing the legitimacy of the process.

It is also worth recalling that the territorial dimension of the PB allowed creating a differentiated mechanism to approve projects in areas of intervention of the BH Citizen Program, already mentioned.

B. PARTICIPATIVE DIMENSION

The Regional Participative Budget process starts with an invitation to the entire population to participate in the Inaugural Assembly, which encompasses the entire municipality. This is followed by Regional Assemblies, held in two phases, also open to all residents, where project proposals are collected and pre-selected. After an analysis by technicians of the Prefecture, these proposals are reported to all the delegates. At this point, a Caravan of Priorities is held with the purpose of helping participants in the selection process through visits to previously selected projects. Afterwards, Regional Forums are held to select the projects and elect the COMFORÇA – the Regional Follow-up and Control Commission. The process concludes at a Municipal Meeting, during which the representatives of COMFORÇA hand a list of Projects over to the Prefect, as shown in **Table III** below.

Table III

Participative Dimension – Regional PB
➢ Municipal Inauguration ➢ Regional Assemblies collect and pre-select projects ➢ Inspection of project demands identified by assemblies ➢ Caravan of Priorities (Delegates visit worksites) ➢ Final selection of projects in Regional Forum ➢ Election of Follow-up and Control Commission – COMFORÇA at Regional Forum ➢ Municipal Meeting of Budget Priorities

Source: SMAPL- PBH

Through this process, 1184 projects have been approved, 67.73% of which are infrastructure and urbanization projects in *vilas* and *favelas*. This percentage is now lower than during the first years of the PB, when this type of projects accounted for 75% of those selected. This change reveals an increased participation of health, education, culture, sports and other areas, where demands are on the rise as those for infrastructure projects fall. This can be taken as a sign of the improvements made in these areas thanks to the PB.

The Housing Participative Budget - HPB is structured in a differentiated form, targeting the specific public of residential areas organized and registered with the Municipal Secretariat for Housing. Its organization and decision-making processes are succinctly outlined in **Table IV** below.

Table IV

Participative Dimension - Housing PB

Stage

- Municipal Housing Council - defines how resources are allocated
- Regional Forums - addresses benefit distribution criteria
- Municipal Forum - applies benefit distribution criteria and elects COMFORÇA
- Execution of projects – public management and self-management
- Social work in squatter areas

Actors involved

- Municipal Government, Municipal Housing Council and Homeless Movement

Source: SMAPL- PBH

The Digital Participative Budget is the most significant innovation in the current process; the broad dissemination and mobilization around the projects to be selected via the Internet, as well as the huge voting achieved in the process indicate the possibility of adding increasingly greater population contingents in the decisions, no only with respect to the PB, but also other policies implemented by the Prefecture.

The results of this participation -more than 350,000 municipalities in the Regional PB-, in addition to the participation achieved in the Housing PB and the 503,266 votes in the Digital PB, are visible in the 1184 projects approved, 816 of which have been completed, 6,068 housing units have been approved and 2183 have been built, as shown in **Table V**.

Table V

Topology	Works	%
Infrastructure	494	41,72
Development of vilas	308	26,01
Education	118	9,97
Health	123	10,39
Social	39	3,29
Sports	47	3,97
Housing	16	1,35
Culture	19	1,60
Environment	20	1,69
TOTAL >>>	1184	100,00

816 projects completed

6,068 housing units approved

2,183 housing units completed

372,785 participants 1994 - 2007

503,266 votes in Digital PB

Source: SMAPL- PBH

C. FINANCIAL DIMENSION

As said before, investments made through the Participative Budget take place in three different spaces of public debate. The first, the Regional PB, although with the systematic reformulations and updates processed during these years, basically maintains the original format defined in 1993. The second one is investments in low-income housing, which takes place through the Housing Participative Budget – HPB, created in 1996. The third relates to the new space created by the Digital Participative Budget process which allows identifying projects via the Internet.

Thus we have a financial dimension, modeled by the distribution of resources by Administrative Region for investments in projects and infrastructure, and by housing developments located in several points around the city, built to address the housing demand. Total funds approved represent a budget of R$ 570 million for PB projects, according to **Table VI** below. This amount does not include the resources for the 2007-2008 term allocated to the HPB, which is at the stage of definition by the Municipal Housing Council.

Table VI

PB	ADMINISTRATIVE REGION	HOUSING	DIGITAL	SUBTOTALS
1994	15,361,230.00	No HPB	No DPB took place	15,361,230.00
1995	18,186,309.00	No HPB took place	No DPB took place	18,186,309.00
1996	27,165,470.00	6,000,000.00	No DPB took place	33,165,470.00
1997	26,948,339.00	7,000,000.00	No DPB took place	33,948,339.00
1998	15,965,216.00	5,237,562.00	No DPB took place	21,202,778.00
1999-2000	60,208,600.00	14,000,000.00	No DPB took place	74,208,600.00
2001-2002	70,873,725.61	16,000,000.00	No DPB took place	86,873,725.61
2003-2004	74,650,004.00	16,500,000.00	No DPB took place	91,150,004.00
2005-2006	79,739,621.00	16,500,000.00	No DPB took place	96,239,621.00
2007-2008	**79,586,302.00**	**Public debate in 2007**	**20,250,000.00**	**99,836302.00**
TOTALS	**468,684,816.61**	**81,237,562.00**	**20,250,000.00**	**570,172,378.61**

Source: SMAPL- PBH

It is worth noting that the funds invested in the projects already completed exceed this amount by far, given the extra expenses that are normally necessary to cover the real costs of execution, as shown in **Table VII** below.

Table VII

Resources Invested / Regional PB Projects Completed

ADMINISTRATIVE REGION	PROJECTS	RESOURCES		FINAL VALUE	
		FORUM	ADJUSTED	CONTRACT	ADJUSTED
		(R$)	(R$) (*)	(R$)	(R$) (*)
Barreiro	89	25,390,483.42	65,779,428.31	40,316,758.67	71,269,108.47
Centro Sur	67	14,185,602.53	39,764,340.11	18,558,129.54	36,974,341.58
Leste	89	16,880,971.29	48,218,565.68	22,456,594.00	50,108,100.18
Nordeste	85	25,196,089.09	65,916,839.63	35,389,872.70	77,566,484.76
Noroeste	96	27,574,647.97	72,632,789.04	39,875,370.67	88,303,387.86
Norte	95	20,132,417.90	53,024,382.91	31,197,360.56	59,186,203.83
Oeste	82	18,176,651.38	50,697,805.17	23,928,158.56	43,135,020.54
Pampulha	65	16,502,483.14	42,401,518.99	26,369,994.16	45,725,574.18
Venda Nova	101	24,400,061.67	62,452,330.20	31,213,054.13	63,971,481.72
TOTAL	769	188,439,408.39	500,888,000.04	269,305,292.99	536,239,703.12

Source: SMAPL- PBH

D. INSTITUTIONAL DIMENSION

The most important aspect of the institutional dimension of the Participative Budget of Belo Horizonte that is worth highlighting is that its formulation, format and functioning are self-regulated, inasmuch as there are no laws that institute or regulate its structure and dynamics. There are however instruments created from the discussion with COMFORÇA that give it validity and define the rules that guide its operation. These include the methodology book, which allocates resources by Sub-region, presents the map with the weights allocated to projects in priority areas for urban and social inclusion, and the map of Special PUs. In turn, the guideline book addresses technical aspects regarding the production and execution of projects, legislation and existing plans, and guidelines from sectoral bodies. Finally, the Document of Rules of Regional Forums standardizes all the rules regarding the PB process. All are known by COMFORÇA and by the PB discussion forums.

From the viewpoint of internal, political and administrative structuring, the Participative Budget has a management group, made of all the bodies and secretariats of the Prefecture related to the Participative Budget process, both in the urban and social areas. This is the broadest forum that gathers, discusses and coordinates government actions related to Participative Budget. It also includes the Popular Participation Coordination and the PB management boards of the Municipal Planning Secretariat, the PB management boards of the Municipal Secretariat for Urban Policies, and the nine Administrative Regions, in addition to the management boards of the Housing Participative Budget.

E. EXPERIMENTAL DIMENSION OF THE METHODOLOGY: Development of the ISAVC Methodology– Indicator of Socio-Environmental Constraints for Life in the City

SUMMARY

Concerning the benefits and the dimension of urban inclusion which Participative Budget fosters in the city, the specific work developed in the scope of this project seeks to build a series of instruments to compare its impact on the population. It is also in this sense that we propose creating a system of indicators that will enable this evaluation to establish, together with other instruments to be created, a comparison of where the resources are applied, how they are applied and what their impact is, so as to be able to redirect investments being made within the Participative Budget process.

The development of the ISAVC methodology in Belo Horizonte will be presented in two modules:

MODULE E.I develops a methodology for the analysis of the quantitative aspects of the impact of Participative Budget projects, measuring beneficiary populations by their proximity to the projects, with emphasis on coverage of benefits.

MODULE E.II develops a methodology for the analysis of the qualitative aspects of the impact of Participative Budget projects, identifying beneficiary populations, with emphasis on social relevance and investment of priorities.

MODULE E.I

Introduction

Actions undertaken by the Prefecture of Belo Horizonte include one of the main pillars of the administrative reform launched in 2001, intersectoriality, understood as the planning, execution and synchronization of sectoral interventions in the production of the urban space in its broadest sense. Within this vision, the broad urban development programs of the Prefecture must interact, enhancing the sectoral actions proposed in them. For the purposes of integrated planning, it is essential to understand not only the urban scenario, but also, and most importantly, the social scenario. If, on the one hand, public authorities subdivide the city in Administrative Regions and planning areas, taking them as territorial units of analysis and strategic planning, social inequality, on the other hand, subdivides the urban space in areas of social inclusion and areas of social exclusion. For this reason, a debate on how government actions can produce a positive social equilibrium deserves a more profound study, and this includes the question of territoriality.

E.I.1. A Question of Territoriality

As stated above, the debate is taken further to include the aspect of territoriality. Mauricio Borges Lemos, in an article in the magazine *Politica Social* **(1)**, defines *urban* as the synthesis of a diversity of goods and services, and *urban life* as the accessibility to this diversity of goods and services. In his article, the former Secretary of Planning of Belo Horizonte asserts that, "*urban is the synthesis of the diverse, the synthesis of access to very different things*". We would like to add a third definition to those given for urban and urban life; defining citizen life as the appropriation by citizens of the physical, territorial and cultural space of the city where they live. Why this cultural dimension? Because the city does not exist without the persons that live in it, and in that case, this deep cultural dimension is essential to understand it as an city that evolves both in time and space. We deduce then that a positive social balance depends on the integrity of this model. This leads us to reflect on some aspects, including the expansion of certain priority areas for social inclusion, having the ICVU – Quality of Urban Life Index **(2)** – as a vector of expansion, and the isolation of certain "small" priority spots of social inclusion in terms of the urban scenario of our immediate surroundings. This is the true face of territoriality, because it shows the two dimensions of the social problem, first a "horizontal" dimension that connotes accessibility limited by physical elements, i.e., distance and lack of urban infrastructure; and second, a "vertical" dimension that connotes accessibility limited by logical, not physical elements, which can be understood as social segregation in its deep sense. The latter dimension, applied to "small" areas of social exclusion embedded in the urban space, suggests actions aimed at rescuing citizens with no access to urban goods, services and infrastructure near their homes. Accordingly, these areas do not require large urban interventions. The former dimension, which in principle applies to larger priority spots for social inclusion, many of which are embedded in even broader spots with low urban quality of life indexes, suggests combined actions aimed at rescuing the citizens that live there, in the vertical dimension, and aims at supplying internal and adjacent urban spaces with infrastructure and means to access a diversity of goods and services in the horizontal dimension. As shown by the method developed in this study, the analysis takes into account these two dimensions, allowing planners to perceive the conditions for the implementation of comprehensive actions. However, it also allows planners to measure sectoral demands in the development of more balanced models of urban development, more committed with social policies.

E.I.2. Accessibility / Provision of Goods and Services

Also with respect to the question of **territoriality**, and understanding the *urban* concept as accessibility to a diversity of goods and services, we can build a synthetic indicator of *accessibility/perception of Participative Budget projects* by adjacent populations, and measure the coverage of these projects, based on nearby population groups and their social relevance, and taking into account their socioeconomic profiles. Defined as a "spatial" indicator, we propose to develop it on the basis of the average distance each socioeconomic group must travel to reach service production centers and/or enjoy the benefits of Participative Budget projects. These socioeconomic groups, for several reasons, are the census sectors of the IBGE, which can be totally or partially contained in a segment of the space that defines a region. One of the reasons to choose the census sectors as territorial units of analysis is that it is easer to add data regarding demographic density and the socioeconomic condition of beneficiary populations, allowing the inclusion of data regarding **coverage and social relevance** of the projects, as already mentioned. In a first approximation, the distance from the center of the territorial unit to the nearest urban infrastructure or project, as indicated in Figure 1, defines the average distance or *impedance* for this socioeconomic group to benefit from it. In a second approximation, the proximity of other projects will allow a joint analysis of the benefits, the diversity of which is in essence the concept of what is *urban*, bringing us back to the key concept of **intersectoriality**.

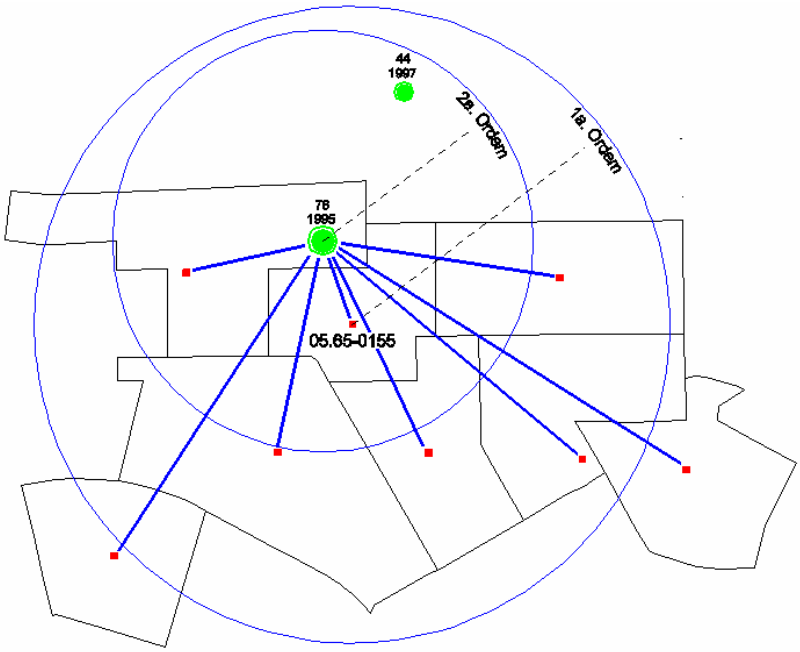


Figure 1 – Scheme for the calculation of average distances

Concerning the ***perception*** component**,** we propose to **reflect** on how effective the PB is as priority investment agent in reducing inequalities revealed by the analysis of intra-urban differences implied by the lack of constraints on the quality of urban life, such as access to income, housing, basic sanitation services and other public services, including health, education, safety and leisure, with significant reflections on social variables such as child mortality, poverty, illiteracy, urban violence, endemic diseases, etc. This reflection will be studied in Module II.

The concept model presented here is based on two non-excluding premises, namely:

First: cities expand radially, from consolidated population hubs towards the periphery. These hubs work as poles of attraction, depending on the offer of a diversity of goods, services and urban infrastructure. This rationale follows the classical thermodynamics model for the transformation of phases in supersaturated solutions, according to which dynamic equilibrium is enforced by the growth of a new phase, in detriment of the previous one. The analogy of the supersaturated solution is in the big city and its infrastructure, housing and job demands, inducing a process of transformation and reorganization of the urban space. In turn, the temperature analogy refers to the economic development of the city, which acts as the main inducer of transformations in the social and urban tissue.

Second: PB projects converge towards these hubs in direct relationship with the application of the social relevance criterion, which measures social exclusion by the lack of goods, services and urban infrastructure; and of the benefit coverage criterion, which measures the representativity of demand-generating poles, which in the end reflects the local demographic density.

Third: acute inequality in the distribution of wealth, access to health, basic sanitation, and education services, as well as other constraints on the quality of urban life evidenced by profound differences, is the risk of death of several social groups **(3, 4)** and other social variables such as poverty, illiteracy and violence.

If these premises are correct, the function of distribution of populations around PB projects must follow the behavior of a continuing probabilistic positive asymmetry function, whose derivatives are annulled at the city boundaries, integrating its entire population, i.e.: $\int f(x)\, dx = 1$. These hubs show different intra-urban quality-of-life indicators, hidden in regional, neighborhood or municipal averages. After many years of PB interventions, these differences will show a notable attenuation, revealing the positive effects of priority investments promoted by the PB.

E.I.3. Partial Presentation of Some Results

As shown in Figure 2, not only have we confirmed the premise of the city expansion model, but we have confirmed the PB criteria used during the last decade or so in Belo Horizonte. These criteria guarantee not only that deficiencies in socially excluded areas are eliminated, as shown by the income profile of the populations nearest to the projects (Figure 4), but also that projects are distributed equally in the urban space, and that they are executed in all the large consolidated population hubs of the city, as shown by the soft curve of Figure 2 and illustrated in the regional cross-section of Figure 5. We analyzed data from the IBGE 2000 demographic census, using as reference the 1996 IBGE population census. A direct comparison of the distribution curves of the populations of 2000 and 1996 shows a growth rate in the coverage of benefits of PB projects higher than the growth of the total population of the city, confirming that the PB is a democratic and effective instrument in the universalization of the advantages the projects bring to the local population. On the other hand, the derivative of the distribution function in Figure 3 confirms the expectation of a positive asymmetry, confirming both the initial assertions and the assertion of the PB criteria.

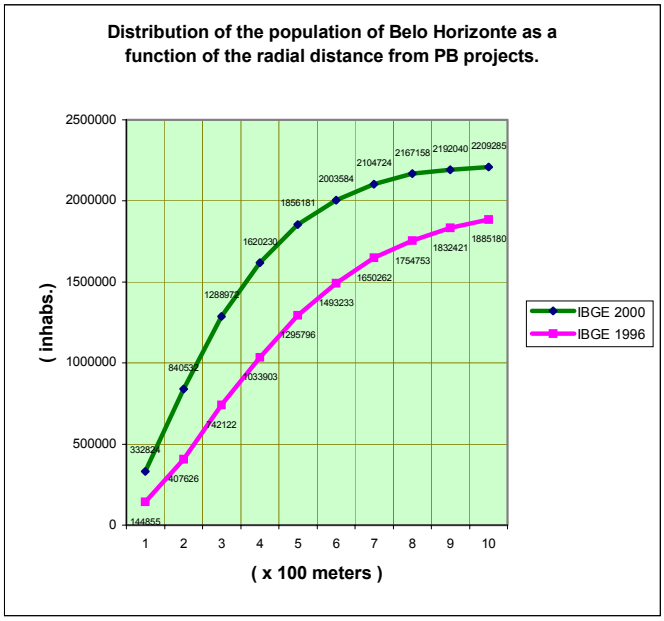


Figure 2 – Interpolation of populations totaled every 100 meters

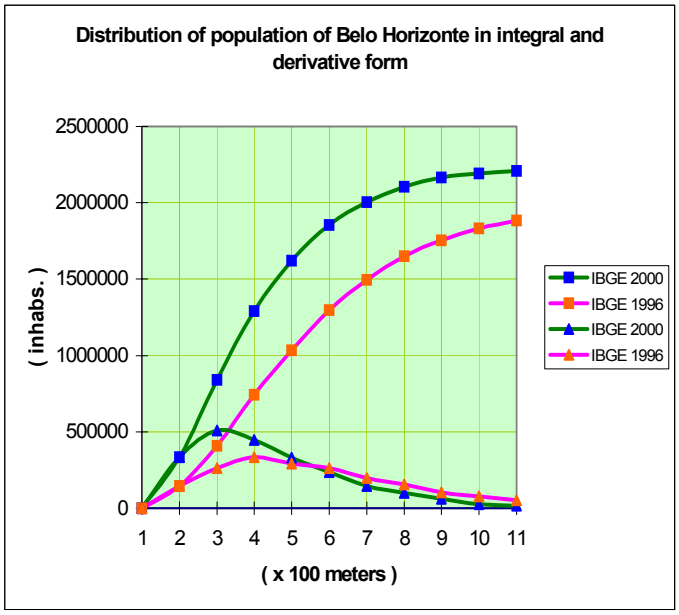


Figure 3 – Interpolation of populations totaled every 100 meters in derivative form

The information of **Block 1** in Figure 4 corresponds to the ICVU score, the fragment included in the sector (in %), the population, the demographic density and the census sectors nearest to the project. The information of **Block 2** corresponds to the ratio of projects near the project, the year of the first project of the ratio, the average distance from the projects to the nearest census sectors, the type of

project and the Administrative region. The information of **Block 3** corresponds to the income profile of the heads of household living in these census sectors. According to the 2000 IBGE census, Group 1 corresponds to 0 – 0.5 SM, Group 2 to 0.5 – 1 SM, Group 3 to 1 – 2 SM, Group 4 to 2 – 3 SM, Group 5 to 3 – 5 SM, Group 6 to 5 – 10 SM, Group 7 to 10 – 15 SM, Group 8 to 15 – 20 SM, Group 9 to more than 20 SM and Group 10 to income 0 (zero), where SM means minimum salary.

The following considerations are important:

1. *The following information can be directly detected in the maps:*

   - Areas included for the first time in a PB project;
   - Areas not included in the current PB, but included in previous projects;
   - Areas with a large concentration of PB projects;
   - Areas never included in projects.

2. *The template can be manipulated in several ways:*

   - Arranging it by the column project number we detect clusters of census sectors nearest to a project. This allows determining beneficiary populations not only in quantitative but also qualitative terms (income profile, priority for social inclusion, schooling, etc.)
   - Arranging it by the column average distance from projects we can quantify and classify populations by their proximity to the benefit provided by the project; for example, very close, close or relatively close. Data collected in field interviews can confirm this perception.
   - Arranging it by the population column, and relating this with the distance column we can identify projects that will benefit a larger number of inhabitants.
   - Arranging it by the project topology column, we can establish different criteria to evaluate the perception of the benefits (depending on the distance) according to area (health, education, infrastructure, urban development of *vilas* and *favelas*, etc.)

3279	100	714	206	05,65-0215
6543	100	623	370	05,65-0213
		1337		

Block 1

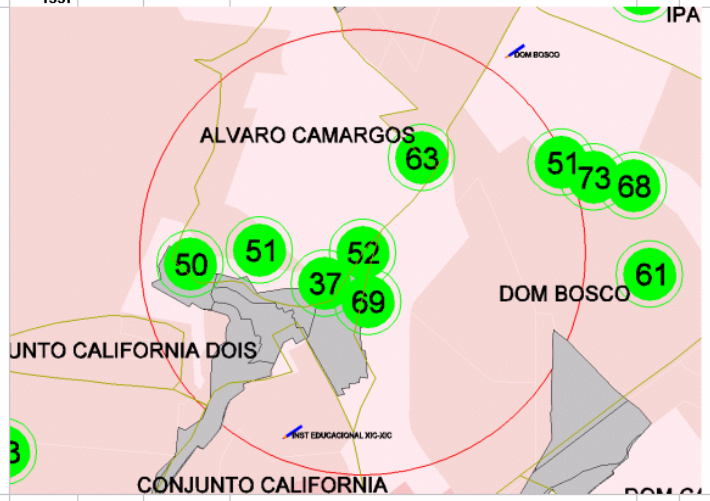
37/51-1997U/52-1997I/69-1999U	1998	73	Urbanização de Vilas	Noroeste
37/51-1997U/52-1997I/69-1999U	1998	218	Urbanização de Vilas	Noroeste

Block 2

2	43	65	26	11	5	2	0	0	20
0	38	68	32	17	1	0	0	1	7
2	**81**	**133**	**58**	**28**	**6**	**2**	**0**	**1**	**27**

Block 3

3279	100	714	206	05,65-0215	37/51-1997U/52-1997I/69-1999U	1998	73	Urbanização de Vilas	Noroeste	2	43	65	26	11	5	2	0	0	20
6543	100	623	370	05,65-0213	37/51-1997U/52-1997I/69-1999U	1998	218	Urbanização de Vilas	Noroeste	0	38	68	32	17	1	0	0	1	7
		1337								**2**	**81**	**133**	**58**	**28**	**6**	**2**	**0**	**1**	**27**



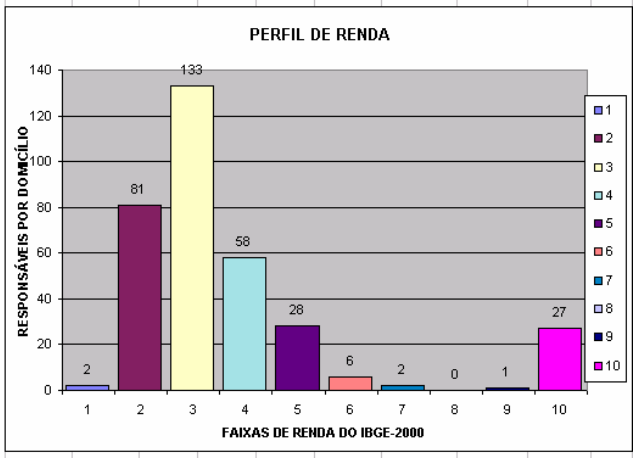


Figure 4 – Profile of report for project 52, PB-97, Northwestern Administrative Region

Figure 5 shows how census sectors are classified according to average distances from projects. It also presents information about schools, health posts, hospitals, day care centers, *vilas* and *favelas* and neighborhood boundaries.

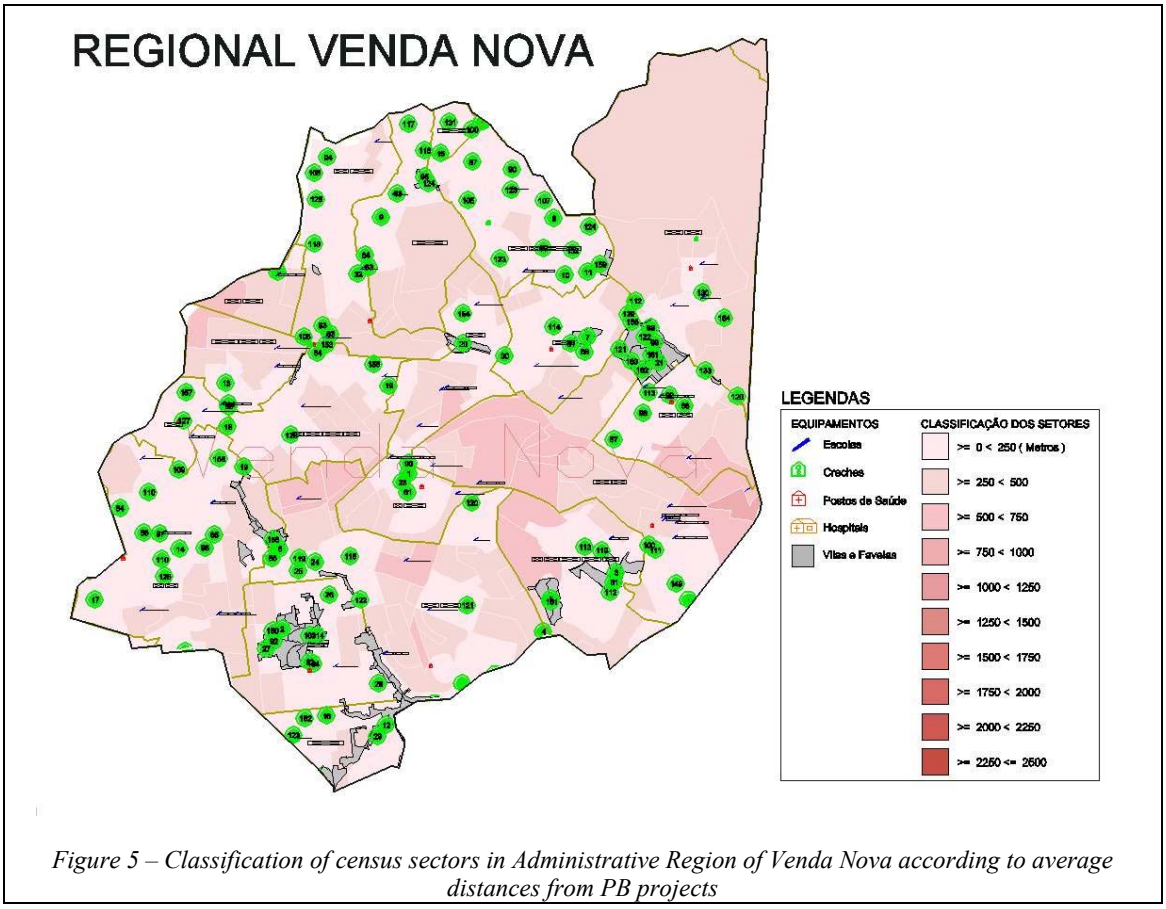


Figure 5 – Classification of census sectors in Administrative Region of Venda Nova according to average distances from PB projects

E.I.4. Preliminary Conclusion

As shown here, the programs of the Prefecture of Belo Horizonte seen from a territorial point of view can become strategic boosters of comprehensive actions in areas of great interest for the city's urban and social development policies. Participative Budget projects do not fall in an urban vacuum or in a vacuum of public power actions; they are always executed in places where these powers are already acting or planning to act. The methodology presented here is proposed for the instrumentalization of this strategic planning, transforming it in an opportunity to reaffirm the precepts of the administrative reform and of the Prefecture of Belo Horizonte's government project, one of the major commitments of which is achieving the social inclusion of broad population groups.

MODULE E.II

Introduction

The general goal of this Sourcebook for the case study of Belo Horizonte, focusing on the application of a methodology to compare the impact of Participative Budget projects based on the concepts of "Social Relevance" and "Coverage" of benefits, is to contribute to improve practices that promote urban and social development in cities, using territorial planning instruments articulated to the Participative Budget process. Specifically, the goal is to build a methodology to monitor the process of priority investing in public projects as a whole, with PB as a great articulator of other sectoral policies. The steps for the preparation of this study follow the recommendations of the CRC – Citizen Report Card - and of the CSC – Community Score Card **(5, 6)**, two participative methods used to evaluate services, governance and public management developed by Samuel Paul's Public Affairs Foundation (PAF) in India, and adopted by the World Bank. These steps are:

1. **Defining policies or programs to be evaluated**: the Participative Budget of Belo Horizonte functions as an articulator of different sectoral policies that, even with its own budget, ends up finding in the PB process a participative way to evaluate the performance of these policies. The process starts with the demands generated to improve essential services and to address the lack of infrastructure and other urban facilities necessary for the generation of those goods and services. Afterwards, the evaluation of the performance of the PB as an agent of articulation of other sectoral policies implies weighing the manifest variables that appear in a single platform, suggesting the use of multivariate analysis techniques for the establishment of the correlations we know exist beforehand.
2. **Identifying the project and the stakeholders**: once the policies and programs that will be evaluated are defined, an important step is to identify the stakeholders that will be involved in the study and the dimensions they represent. Who (stakeholder) responds for what (dimension)? The credibility of the study depends on this.
3. **Draft questionnaire / selection of variables**: this aspect is critical and must be idealized to make the set of variables simple enough so that they can be answered, but sufficiently representative to cover all the key dimensions of the study. Here, to err in excess can be as bad as erring by omission.
4. **Selection of sample**: a careful demographic survey is essential in the process of selecting the best sample and its ideal size. As the basis of our analysis is territorial, the definition of the sample that would be the ideal territorial unit of analysis takes into account the inadequacies of the geopolitical subdivisions and the local popular culture. Concerning the size of the sample, none of the extremes is interesting, because a) a limited number of respondents means that the model is not very sensitive to more localized problems; b) too many respondents makes the model excessively sensitive, losing the vision of the whole of the city.
5. **Information collection**: caution is needed to raise the awareness of those collecting the information and of those that produce information related to the process. Human error in the manipulation of data can be difficult to detect in a process like this.
6. **Data analysis**: this implies collecting and analyzing existing data, including processing missing data and/or data measured outside the patterns.
7. **Dissemination of results**: this is the main component of the work and needs to be understood with due consideration of the relationships of power, of the political economy and of the economic restrictions of the situation.
8. **Institutionalization**: once the model has shown it effectiveness, some precautions are necessary to institutionalize the process of providing the bases of information for periodical updates compatible with the cycle of programs evaluated.

Definitions

Taking the urban concept as access to a diversity of goods and services that ensure an adequate quality of life, we propose using the ISAVC as a supra-urban indicator, supported by its applications in the city as a whole. Thus, the absence of the factors that determine an adequate quality of life characterizes urban exclusion, both in its socioeconomic dimension and in its physical-territorial-environmental dimension. The complex interrelations between these conditions imposes the need to adopt a multivariate analysis technique, which means that the variables studied are random and interrelated, so that their different effects cannot be significantly interpreted in an isolated fashion. In our case, we chose the method known as Factor Analysis to analyze major components and common factors, because it is a statistical method that analyzes interrelations between a large number of variables and explains these variables in terms of their common latent dimensions (factors).

E.II.1. Territorial Appropriation of the City by Public Powers

The city of Belo Horizonte is subdivided in 9 (nine) Administrative regions, 41 (forty-one) Sub-Regions, 81 (eighty-one) PUs - Planning Units, 86 (eighty-six) Elementary River Basins, 256 (two hundred fifty-six) Sub-basins, 500 (five hundred) low-income neighborhoods and 2.562 (two thousand five hundred sixty-two) census sectors, without including Health Districts (SLU), Coverage Areas (Health), Districts (COPASA) and other political - administrative divisions.

This gives us an idea of how difficult it is to articulate sectoral policies and therefore to gather information regarding the execution of these policies for the purposes of an integrated planning. However, based on past experiences and according to the study proposed, some considerations are required:

- Up to the level of river basins (86 divisions), it is understood that territorial units are still too large for the purposes of analyzing intra-urban differentials, understood here as the constraints on the quality of life in the city. At this level, the model becomes insensitive to localized problems, concealing them in the spatial average;
- In the other extreme we have the census sectors of the IBGE (2,562 divisions), excessive in number to allow the type of statistical analysis proposed here, configuring an oversized sample, making the model excessively sensitive. This means that increasingly lower effects become statistically significant **(7)**. In this case we can also place the neighborhoods (500 divisions) that also have the notable restriction of not being a technical unit of analysis;
- Everything points to the sub-basins (256 divisions), which consubstantiate a sample size adequate for the method proposed, in addition to representing an excellent base of information coming from the PMS – the Municipal Sanitation Plan, as seen below.

E.II.2. Selection of Variables

After deciding which territorial unit to use, we selected the variables that would be considered in the first approach of a model that seeks to include the major dimensions of the Participative Budget of Belo Horizonte, namely: the urban dimension, the social dimension, the planning dimension, the participative dimension, and the financial dimension. At this stage, we followed some recommendations to adjust the factor analysis method:

1. Researchers must know how the variables are interrelated in order to adequately interpret the results;

2. The quality and the significance of specific factors reflect the concept structures of the variables included in the analysis;
3. A concept model must be developed to avoid omitting critical prediction variables, as well as the indiscriminate insertion of variables, expecting that the technique will "reveal" those that are relevant. First, because irrelevant variables can increase the adjustment of the data in the sample, but turn them less susceptible of generalization. Second, irrelevant variables, even if they do not affect the estimates of relevant variables, can hide their true effects, due to multi-colinearity. For this reason, indiscriminately including variables that are conceptually irrelevant can cause several undesirable effects, even though these additional variables do not directly influence the results of the model.

In a first approach, the following variables were chosen:

Table 1 - Set of Variables of Analysis

VARIABLE	DESCRIPTION	ORIGIN	DIMENSION
ICE	Sewage Collection Index	PBH / COPASA	Urban
ICL	Waste Collection Index	SLU	Urban
CHEFES2SM	Group of heads of household with income below or equal to 2 (two) SM	IBGE	Social
CHEFES3AE	Group of heads of household with 3 years of schooling o less	IBGE	Social
PARC_PGE	Group of sub-basin area covered by PGE – specific global plans	URBEL	Planning
WORKS_TODAS	Total PB Projects in sub-basin.	SMPL	Participative
WORKS_1000	PB projects per thousand inhabitants	SMPL	Participative
INVESTMENT	Values approved and updated for PB projects	SMURBE	Financial
PARC_POP_18_24	Population group aged 18-24	IBGE	Social
DENSITY	Demographic density	IBGE	Urban

The set of initial data ended up as follows:

BASIN	SUB-BASIN	ICE	ICL	PRIPMS	CH_2SM	CH_3AE	P_PGE	PROJECTS	INVESTMENT
Corr. MenSa(Cardoso)	4112201	0,24	0,56	2,00	0,75	0,46	0,75	24	14,384,707,53
Corrego Olaria (Taquaril)	4113100	0,23	0,62	15,00	0,75	0,41	0,48	17	9,494,213,70
Piteiras	4111401	0,90	0,73	20,00	0,63	0,37	0,28	24	14,304,980,04
Leitão	4111605	0,51	0,73	1,00	0,52	0,32	0,58	7	3,210,111,36
Leitão	4111604	0,57	0,68	28,00	0,64	0,40	0,30	9	4,706,549,19
Corr.Freitas(Av.StaTereza)	4112900	0,54	0,71	14,00	0,65	0,33	0,36	9	5,208,474,18
Av.Andradas (Vera Cruz)	4110018	0,44	0,67	13,00	0,65	0,33	0,48	2	819,407,00
Av. Estrela of Belem	4130002	0,87	0,98	201,00	0,59	0,29	0,16	23	21,970,626,45
Embaubas	4110900	0,73	0,75	91,00	0,60	0,33	0,29	13	8,534,613,80
Corrego del Nada	4140202	0,66	0,90	9,00	0,65	0,36	0,41	9	4,714,828,24

E.II.3. Reasons for a Factor Analysis

Certain concepts, like social and urban exclusion, are not well defined because of the diversity of scenarios presented by the cities. Not being directly observable, these concepts are frequently called latent variables and it is expected that their effects will be revealed through the manifest variables. The

most popular method to investigate the dependency of a set of manifest variables compared with a lower number of latent variables is called factor analysis.

Factor analysis can identify the underlying structure of a data matrix, as well as provide a process for data reduction. In general terms, factor analysis addresses the problem of analyzing the structure of the interrelations (correlations) between large numbers of variables, defining a set of common latent dimensions called factors, and determining the degree in which each variable is explained by each factor **(7)**. In our case, the main objective is reducing the data, and this implies that there is a latent order in the data analyzed. Reduction to main factors greatly favors retroaction to previous periods, significantly reducing the need of data to analyze the evolution of the indicators.

E.II.4. Visual Examination of Correlation Matrix

Variables that do not significantly increase any factor or that present very low communalities must be ignored or eliminated. Ignoring a variable can be good if the objective is only to reduce data. Eliminating a variable can be good when it is of limited significance for the objective of the study or when it presents a very low communality value. When one or more of these variables are eliminated, the set of data must be processed again.

In this first approach, the variables **PARC_POP_18_24** and **OBRAS_1000** present communalities of 0,139 (unacceptable) and 0,422 (low), respectively. These variables, as seen in the matrix of correlations, also present insignificant factorial loadings for the set of factors present, suggesting their elimination in the sequence of the study. The first, PARC_POP_18_24, which represents the population with access to the labor market, should be eliminated because it does not have a significant correlation with the other dimensions in the analysis. The second, OBRAS_1000, hypothetically representative of the participative dimension, seems not to reflect this dimension. Another variable that is included in these considerations is DENSITY. Its communality, 0,692 (reasonable) does not justify keeping it, because of the mediocre factorial loadings it presents for the set of factors. Its MSA (Measure of Sampling Adequacy) value = 0,546 is considered poor. This measure ranges from 0 to 1, reaching the value 1 when each variable is perfectly foreseen without error by the other variables **(7)**. In this sense, demographic DENSITY is contradictory: although it presents high values commonly in the areas of *vilas* and *favelas*, in vertical central areas its values are equally high, not being necessarily correlated with factors of urban and social exclusion.

Accordingly, we eliminated these variables, obtaining a new matrix of reduced correlations, shown below.

Original Correlation Matrix

Correlation	ICE	ICL	CHEFES2SM	CHEFES3AE	PARC_PGE	OBRAS_TODAS	OBRAS_1000	INVESTMENT	POP_18_24	DENSITY
ICE	1,000	,550	-,395	-,429	-,519	-,256	-,134	-,193	-,116	-,032
ICL	,550	1,000	-,434	-,510	-,731	-,348	-,123	-,272	-,206	-,205
CHEFES2SM	-,395	-,434	1,000	,960	,378	,344	,275	,351	,287	-,097
CHEFES3AE	-,429	-,510	,960	1,000	,442	,366	,315	,357	,295	-,056
PARC_PGE	-,519	-,731	,378	,442	1,000	,452	,078	,360	,138	,463
OBRAS_TODAS	-,256	-,348	,344	,366	,452	1,000	,232	,894	,146	,253
OBRAS_1000	-,134	-,123	,275	,315	,078	,232	1,000	,180	,043	-,188
INVESTMENT	-,193	-,272	,351	,357	,360	,894	,180	1,000	,153	,196
PARC_POP_18_24	-,116	-,206	,287	,295	,138	,146	,043	,153	1,000	,063
DENSITY	-,032	-,205	-,097	-,056	,463	,253	-,188	,196	,063	1,000

Determinant = ,001

Communalities

	Initial	Extraction
ICE	1,000	.559
ICL	1,000	.744
CHEFES2SM	1,000	.819
CHEFES3AE	1,000	.859
PARC_PGE	1,000	.825
OBRAS_TODAS	1,000	.922
OBRAS_1000	1,000	.422
INVESTMENT	1,000	.905
PARC_POP_18_24	1,000	.139
DENSITY	1,000	.692

Reduced Correlation Matrix

Correlation	ICE	ICL	CHEFES2SM	CHEFES3AE	PARC_PGE	OBRAS_TODAS	INVESTMENT
ICE	1,000	,551	-,397	-,431	-,519	-,257	-,194
ICL	,551	1,000	-,435	-,510	-,731	-,349	-,273
CHEFES2SM	-,397	-,435	1,000	,961	,378	,346	,353
CHEFES3AE	-,431	-,510	,961	1,000	,442	,368	,359
PARC_PGE	-,519	-,731	,378	,442	1,000	,452	,361
OBRAS_TODAS	-,257	-,349	,346	,368	,452	1,000	,894
INVESTMENT	-,194	-,273	,353	,359	,361	,894	1,000

Determinant = ,002

E.II.5. Significance of Factorial Loadings

Practical Significance

It is considered that the values of the factorial loadings have the following practical significances:

Value of Loading	Practical Significance
> +- 0.30	Minimum Level
> +- 0.40	Significant
> +- 0.50	Has Practical Significance

The square of the factorial loadings represents the amount of the total variation of the variable explained by the factor; that is, the factorial loading of the variable **OBRAS_TODAS = -0.257** reflects that only **6.6%** of the total variation of the greatness (**OBRAS_TODAS**) is explained by the factor **ICE** – Sewage Collection Index. Thus, the factorial loading must exceed 0.70 for the factor to explain 50% of the total variation of this variable. In our study, we have the following table for the larger factorial loadings observed for some of the variables of the study:

Table 2 - Practical significance of factorial loadings observed for some variables

Description	Value	$(Value)^2$	Significance
Loading of variable income in schooling factor	0.961	0.923	**92%** of total variation of variable **income** CHEFES2SM – income of head of household equal or below 2 minimum salaries –**explained by CHEFES3AE factor** (low schooling).
Loading of variable investment in PB project factor	0.894	0.799	**80%** of variation of **INVESTMENT explained by OBRAS_TODAS factor** (presence of PB projects).
Loading of variable waste collection in Global Plan factor	0.731	0.518	**52%** of variation of **ICL** –waste collection index **explained by PARC_PGE factor** (group of basins with Specific Global Plan).
Loading of variable sewage collection in waste collection factor	0.551	0.303	**30%** of variation of **ICE** – Sewage Collection Index explained by **ICL** factor - waste collection index.

Statistical Significance

In terms of statistical significance, we can work on two dimensions: size of sample and number of variables. Thus, we consider the following table of loading significance according to the size of the sample.

Value of Loading	size of sample (respondents)
0.30	350
0.35	250
0.40	200
0.45	150
0.50	120
0.55	100
0.60	85
0.65	70
0.70	60
0.75	50

In our study we are working with a sample of 256 sub-basins, suggesting that values of factorial loadings > 0.350 have statistical significance **(7)**.

The number of variables analyzed also influences the significance of the loadings, keeping the following ratio:

> Number of variables < value of significant loadings

E.II.6. Analysis of Components

The general correlation matrix is transformed by estimating a factorial model in order to obtain a factorial matrix. The factorial loadings of each variable in the factors are interpreted to identify the latent structure of the variables. Generally speaking, the greater the number of factors extracted, the better the adjustment and the greater the percentage of variation of the data explained by a factorial solution. However, the greater the number of factors extracted, the lower the parsimony of the solution. Evidently, this supposes the existence of criteria to limit the ideal number of factors. In our study we adopted the latent root criterion.

Latent Root

In the case of the latent root criterion, only auto-values > 1.0 are considered in the selection of components for subsequent analysis.

Scree Test

This test can indicate what other factors with values close to 1.0 are appropriate.

In our matrix we see that 3 (three) factors explain 87% of the variation of the set of variables.

Total Variation Explained

Component	Initial Auto-values			Extraction of Sum of Squared Loadings		
	Total	% of Variation	Cumulative %	Total	% of variation	Cumulative %
1	3,751	53,585	53,585	3,751	53,585	53,585
2	1,321	18,870	72,456	1,321	18,870	72,456
3	1,027	14,665	87,121	1,027	14,665	87,121
4	,510	7,292	94,413			
5	,256	3,661	98,074			
6	,100	1,424	99,498			
7	,035	,502	100,000			

E.II.7. Interpretation of Factors

When the variables are very different, that is, when there are high correlations between them, the index obtained by adding the segments will be low. On the contrary, if the variables drop in one or more highly related groups, the index will near 100%. In our solution, as shown below, the index shows that 87.121% of the total variation is represented by three factors. This means that the variables of the study are in fact closely related.

Component Matrix

	Components			
	1	2	3	Communalities
ICE	-,646	,363	,311	,646
ICL	-,759	,291	,375	,800
CHEFES2SM	,774	-,237	,571	,982
CHEFES3AE	,814	-,255	,502	,978
PARC_PGE	,761	-,124	-,454	,802
OBRAS_TODAS	,700	,672	-,061	,946
INVESTMENT	,654	,719	,036	,945
Segment	**53,585%**	**18,870%**	**14,665%**	**87,121%**

The linear sum of factorial loadings squared is a number called **communality**. The communality shows the amount of variation in a variable, which is explained by the factors extracted together; this means that the proportion of the variation in one given variable is explained by the factorial solution.

In our case, the communality 0.646 for the variable ICE – Sewage Collection Index – shows that this variable is lower than the rest, when compared with all the others. In this sense, we should recall that the sewage collection service in Belo Horizonte is provided by COPASA, and not by the local government, which would explain this relative disassociation of the sewage collection variables compared to other variables in the set of analysis. However, since 2004, a new agreement between state companies and the Prefecture of Belo Horizonte led to a Municipal Sanitation Plan–PMS, conceived by the HPB, which establishes an associated administration between the prefecture, a concession holder, a representative of civil society represented by COMUSA - the Municipal Sanitation Council, with funds from the FMS - the Municipal Sanitation Fund - exclusively for the execution of projects and other basic sanitation works in priority areas established in this plan as integrated sectoral interventions, executed by the local power. FMS funds originate from the income earned by the provider of water treatment services to the municipality of Belo Horizonte, and represents, as far as we know, an unprecedented experience in the national scenario.

Also as a product of the analysis of communalities, the variable income of head of household, with a communality of 0.982, is the best example of a variable explained by the set of factors presented for the factorial solution. We might say that the condition of poverty is fully explained in the first place by the presence of negative factors such as low schooling, and by the lack of urban infrastructure in their areas of residence. Positive factors include actions by the public power to mitigate the effects of these deep distortions, indicated by the variables of investment in PB projects, which here represent investment in priorities. However, and in spite of the development of the PB program, the scenario depicted here still raises some concerns: how to generate a long-term positive social balance? The answer to this challenge can be found in developing income transfer programs, which have immediate effects, and labor training programs, in order to guarantee the sustainability of the solutions. In Belo Horizonte, the PB program is organized as a BH-Citizen program, which deals precisely with these aspects.

Also in a preliminary way, based on the rules of the practical significance of factorial loadings, we can identify some groups of strongly related variables whose properties are stressed in the composition of the factors extracted. Let's examine, for example, the three prevailing groups in the composition of Factor 1 – the main factor, which explains 54% of the total variation. The first in significance is the group of variables that represent the social dimension (schooling-income). The second is the group of variables that represent the urban dimension (planning-infrastructure). The third is a group of variables that represent the participative dimension (projects-investments). No less significant is the composition of Factor 2 that, although it explains 18.9% of the total variation, only presents one group of variables as having practical significance, precisely in the participative dimension. Finally, Factor 3 "loads" the social dimension once again, but it also adds some significance to the loadings of the urban dimension. What we have then are groups of variables explained -to be more precise- by the factorial solution presented, that is: the ***social*** dimension, the ***participative*** dimension, and the ***urban*** dimension.

However, the intensification of this discussion requires an analysis of the significance and the internal consistency of the factors. The significance of a factor (or of a set of factors) increases in the proportion of the variation represented by the factor after the rotation. If the rotation is orthogonal, the significance of the factor will be related to the size of its SSLs (the Sum of Square Loadings of the Component Matrix after Rotation). These sums (SSLs) are converted to a greatness of the proportion of variation for a factor, dividing them by the number of variables **(8)**. In this case, we used the Varimax rotation method with Kaiser Normalization. The result of this rotation can be verified in the rotation component matrix shown below.

Rotation Component Matrix

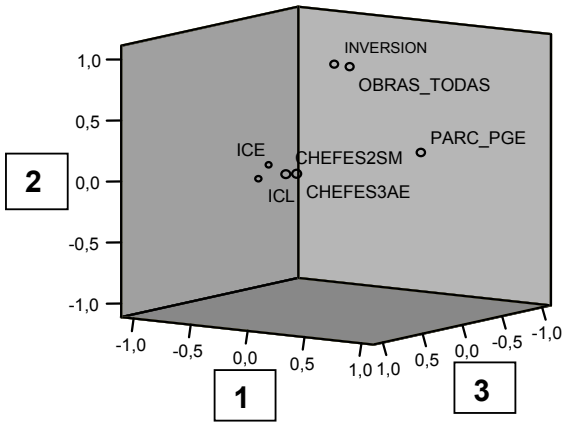
	Components			
	1	2	3	Communalities
ICE	-,765	-,025	-,245	0,646
ICL	-,850	-,146	-,239	0,801
CHEFES2SM	,224	,172	,950	0,982
CHEFES3AE	,302	,179	,925	0,979
PARC_PGE	,836	,293	,128	0,801
OBRAS_TODAS	,221	,936	,145	0,946
INVESTMENT	,109	,950	,178	0,946
SSLs	**2,209**	**1,948**	**1,944**	**6,101**
% of Variation	**31,557%**	**27,829%**	**27,771%**	**87,157%**

As expected, rotation favors the analysis of the components insofar as it reveals the underlying dimensions of the factorial solution presented. If we identified these dimensions before, now with much more reason we can even name the factors identified until now only by numbers. These factors will evidently be associated to the latent dimensions we want to measure. Let's see:

Factor	Dimension	Name	Measure
1	Urban	**Urban Exclusion**	Territorial-urban exclusion verified by PGE and lack of basic waste collection services and sewage network infrastructure.
2	Participative	**Political Inclusion**	Popular participation in process of discussion and selection of budget priorities to reduce differences in socio-environmental constraints for life in the city, with the goal of investing in priorities.
3	Social	**Social Exclusion**	Lack of access to environmental conditions, urban goods and services determined by schooling-income pair, which is intimately related to the urban exclusion component.

The Rotation Component Matrix also reveals a quasi-perfect equilibrium in the ratio of the variation represented by each of the 3 (three) factors. This means that in our study these factors acquire practically the same significance and together, parsimoniously, explain 87.15% of the total variation of the set of original variables. The following figure presents the spatial distribution of the components in the rotational space.

Representation of Components in rotational space



E.II.8. Analysis of Factorial Score

In a first evaluation, we analyzed the resulting score for the main factors, that is, those shown in the columns of the matrix below. This is a preliminary evaluation, considering that these factors explain 87% of the total variation of the set of variables of the study.

Component Score Coefficient Matrix

	Components		
	1	2	3
ICE	-,172	,275	,303
ICL	-,202	,220	,365
CHEFES2SM	,206	-,180	,556
CHEFES3AE	,217	-,193	,489
PARC_PGE	,203	-,094	-,443
OBRAS_TODAS	,187	,509	-,059
INVESTMENT	,174	,544	,035

To obtain the strata we used a technique called hierarchical grouping analysis, which groups relatively homogeneous cases of a specific variable, in this case, the score obtained by the main factors. The scores given to the strata for the **Socio-environmental Constraints for Life in the City** considered here were the following:

Stratum	Score
1	Very poor
2	Poor
3	Average
4	Good

Comments

The analysis of the score of the main components for the sub-basins shows that there are extremes represented by two very poor areas in stratum 1, and a group of ten areas that show excellent conditions in stratum 4. They are, respectively, the following:

BASIN	ICE	ICL	CH_2SM	CH_3AE	P_PGE	OBRAS	INVESTMENT	FAC1_1	FAC2_1	FAC3_1	ESTR
STRATUM 1											
Av.MenSa(Cardoso)	0,24	0,56	0,75	0,46	0,75	24	14.384.707,53	5,5851	0,3294	-3,5903	1
Olaria (Taquaril)	0,23	0,62	0,75	0,41	0,48	17	9.494.213,70	4,2974	-0,7481	-2,3402	1
STRATUM 4											
Corrego da Serra	0,98	0,99	0,05	0,01	0,00	0	0,00	-1,1853	0,0459	-1,1508	4
Acaba Mundo	0,99	1,00	0,06	0,02	0,00	0	0,00	-1,1856	0,0585	-0,9900	4
Leitão	1,00	1,00	0,08	0,01	0,00	0	0,00	-1,1880	0,0701	-0,9360	4
Acaba Mundo	0,95	1,00	0,03	0,01	0,00	0	0,00	-1,1952	0,0354	-1,2036	4
Acaba Mundo	0,99	1,00	0,07	0,01	0,00	0	0,00	-1,2000	0,0740	-1,0051	4
Leitão	1,00	1,00	0,06	0,02	0,00	0	0,00	-1,2003	0,0807	-0,9703	4
Acaba Mundo	1,00	1,00	0,06	0,02	0,00	0	0,00	-1,2081	0,0875	-0,9908	4
Acaba Mundo	1,00	1,00	0,06	0,01	0,00	0	0,00	-1,2196	0,0979	-1,0134	4
Acaba Mundo	0,99	1,00	0,04	0,01	0,00	0	0,00	-1,2238	0,0927	-1,0804	4
Resaca	1,00	1,00	0,04	0,01	0,00	0	0,00	-1,2377	0,1135	-1,0645	4
Leitão	1,00	1,00	0,03	0,01	0,00	0	0,00	-1,2580	0,1314	-1,1160	4
Bom Jesus	1,00	1,00	0,00	0,00	0,00	0	0,00	-1,3062	0,1736	-1,2407	4

We see profound differences in these areas compared with the variables of the study. In the analysis of the full set of information we can also see that some sub-basins of the Serra, Acaba Mundo, Ressaca and Leitão streams also appear among the most critical areas, indicating relations of proximity between extremes. However, a more profound analysis will show the numerous contrasts of the city due to this proximity. The focus of our study was also to show the mechanisms of investment in priorities implemented by the PB, seeking a way to measure and improve it in future editions of the PB. For this we grouped 25% of the poorest areas of the city, according to the factorial score of the main components. It is worth recalling that the mean of the values of the set of variables analyzed ranks 106 among 256 sub-basins, representing therefore 40% of the total.

Although they account for only **25%** of the sub-basins in the city, we see that approximately **55%** of all the projects approved by the PB, of a universe of **993** projects, are concentrated here, representing close to **60%** of the funds invested. When we consider **40%** of the total of sub-basins that are below average, these values increase to **73%** of the number of projects approved and **76%** of the funds invested. This verifies the effectiveness of PB mechanisms as **planning instruments** (concentrating companies and giving sequence to projects) and of **priority investing** (concentrating resources in the poorest areas), which is the most prominent factor.

E.II.9. Extending Score of Factors to PUs–Planning Units

It will always be possible to extend the properties of the territorial units analyzed, the sub-basins, to units that cover larger areas, and that are interesting for the development and articulation of different sectoral policies without prejudice of a more localized vision provided by the profile of the sub-basins. This operation is based on the calculation of a weighted average from the proportionality of cells that represent the sub-basins compared with a larger territorial unit. This spatial ratio is obtained by crossing information using a geoprocessing method, which produces a table of data like the one shown below.

CELULA	UP	NOME_UP	AREA_UP	PRO_UP	SUB-BACIA	FAT_1_SB	FAT_1_UP	ESTRATO
775	1	Bairro das Industrias	3878953,69675	23,18	4110210	-0,43	-0,10	3
146	1	Bairro das Industrias	3878953,69675	0,01	4110125	-0,41	0,00	3
751	1	Bairro das Industrias	3878953,69675	21,31	4110404	0,30	0,06	3
209	1	Bairro das Industrias	3878953,69675	0,05	4110209	-0,43	0,00	3
696	1	Bairro das Industrias	3878953,69675	16,47	4110002	0,61	0,10	3
826	1	Bairro das Industrias	3878953,69675	38,60	4110001	-0,26	-0,10	3
220	1	Bairro das Industrias	3878953,69675	0,07	4110403	0,49	0,00	3
286	1	Bairro das Industrias	3878953,69675	0,31	4110208	-0,34	0,00	3
286	1	Bairro das Industrias	3878953,69675	100,00			-0,03	3

The meaning of the fields shown in the table above is the following:

Field	**Meaning**
CELULA	Portion of sub-basin totally or partially contained within PU
UP	PU Identifier
NOME_UP	Name of PU
AREA_UP	Total area of PU
PRO_UP	Ratio of cell compared with UP in percentage
SUB-BACIA	Code of Sub-basin
FAT_1_SB	Value of (main) Factor 1 of factor analysis for Sub-basin
FAT_1_UP	Contribution of Factor 1 to factor analysis for UP
ESTRATO	Stratum where PU is inserted after hierarchical analysis of grouping of score

This gave us the score and the stratification of the PUs according to the table below. The resulting map shows the stratum to which each PU belongs, with details on the order of sub-basins according to their score.

SCORE AND STRATIFICATION OF PUs

NUM_UP	NAME OF PU	PU SCORE	STRATUM
21	Cafezal	3,32	1
26	Taquaril	3,27	1
60	Morro das Pedras	2,18	2
20	Barragem	2,07	2
56	Jardim Felicidad	1,88	2
32	Ribeiro de Abreu	1,35	3
33	Belmonte	1,17	3
48	Prado Lopes	1,17	3
28	Baleia	1,12	3
78	Ceu Azul	1,05	3
73	Mantiqueira/Sesc	1,04	3
7	Olhos D´Agua	0,99	3
29	Mariano de Abreu	0,90	3
31	Capitão Eduardo	0,83	3
35	Sao Paulo/Goiânia	0,79	3
54	Tupi/Floramar	0,76	3
41	Jardim Montanhês	0,75	3
57	Cabana	0,72	3
38	Concordia	0,69	3
51	Furquim Werneck	0,64	3
55	Primeiro de Maio	0,55	3
37	Cachoeirinha	0,51	3
53	Sao Bernardo	0,51	3
4	Barreiro de Cima	0,50	3
71	Sao Francisco	0,49	3
76	Jardim Europa	0,48	3
80	Sao João Batista	0,42	3
34	Gorduras	0,42	3
43	Antônio Carlos	0,40	3
63	Garças/Braunas	0,39	3
36	Cristiano Machado	0,35	3
27	Santa Efigênia	0,33	3
23	Boa Vista	0,33	3
5	Jatoba	0,32	3
47	Santa Maria	0,26	3
74	Serra Verde	0,21	3
75	Piratininga	0,20	3
50	Isidoro Norte	0,19	3
49	Jaqueline	0,16	3
72	Confisco	0,14	3
16	Serra	0,11	3
45	Camargos	0,11	3
25	Pompeia	0,07	3
77	Venda Nova	0,07	3
79	Copacabana	0,06	3

62	Estoril/Buritis/Pilar Oeste	0,04	3
39	Gloria	0,03	3
67	Sarandi	0,02	3
58	Jardim America	-0,02	3
66	Jaragua	-0,02	3
1	Bairro das Industrias	-0,03	3
2	Lindeia	-0,06	3
19	Belvedere	-0,09	3
61	Betânia	-0,16	3
6	Cardoso	-0,17	3
40	Abilio Machado	-0,17	3
69	Ouro Preto	-0,18	3
46	PUC	-0,34	4
17	Mangabeiras	-0,34	4
52	Planalto	-0,37	4
3	Barreiro de Baixo	-0,38	4
68	Castelo	-0,44	4
42	Caiçara	-0,44	4
8	Barreiro-Sul	-0,46	4
18	Sao Bento/Sta. Lucia	-0,49	4
64	Santa Amelia	-0,61	4
11	Francisco Sales	-0,61	4
24	Floresta/Santa Tereza	-0,62	4
44	Padre Eustaquio	-0,65	4
59	Barroca	-0,66	4
22	Instituto Agronômico	-0,67	4
65	Pampulha	-0,68	4
70	UFMG	-0,71	4
13	Prudente de Morais	-0,72	4
14	Santo Antônio	-0,73	4
30	Santa Inês	-0,82	4
15	Anchieta/Sion	-0,87	4
12	Savassi	-0,92	4
10	Centro	-1,05	4
9	Barro Preto	-1,10	4

E.II.10. Plan for the Dissemination of the Results

It is quite clear that the ISAVC obtained from the factorial score is a synthetic indicator that represents the latent dimensions revealed by the method of factorial analysis of a multidimensional set of variables. This means that the use of the ISAVC is limited to the instrumentalization of the planning of integrated intersectoral actions, closing the cycle supervision -> monitoring -> control -> action in the development of a plural policy. The indicator should not be understood or used in detriment of the plurality of factors which it synthesizes. In other words, the indicator should be discussed considering the initial dimensions it includes, aiming sectoral policies to include them in the search for comprehensive, effective and sustainable solutions to the complex socio-environmental problems that affect the quality of life of most Brazilian cities.

To summarize, an indicator like the ISAVC does not point to projects or other isolated interventions; but rather to the need of connecting sectoral actions, which is the exclusive role of planning. It also reflects the product of past actions, contributing to feed back the same planning, transforming it in a monitoring and control instrument.

As indicated in step 3 (draft questionnaire/selection of variables), the methodology developed here could be used both for the construction of management indicators, which is the case of the ISAVC, as well as for the construction of indicators for the participative evaluation of the quality of services, governance and management of public funds provided by the local powers. The methodology is the same, but the source and the scope of the information differ. In the first case, where the management indicator is formulated, the scope is intra-institutional. In the second case, participative evaluation, the scope is extra-institutional. Here we define the scope for the dissemination of the results. This issue is critical because if some aspects within the intra-institutional scope are externalized indiscriminately, too many expectations could be raised, there could be confusions in the relationship of power, and misunderstandings about the economic restrictions involved. In summary, this could create a series of obstacles for the execution of a plural policy. On the other hand, if some aspects that correspond to the extra-institutional scope are not fed back to the public/participative agents as a response from the public powers to their criticisms and claims, this could annul any effort by the local powers to educate the population and share with it the difficulties it faces.

The ISAVC is a planning indicator, and its scope of dissemination is the broader planning sphere, when the decision-making process is participative, as is the case of the Participative Budget.

E.II.11. Institutionalization Plan

According to step 8 (Institutionalization), once the model has revealed its usefulness, some precautions are needed to institutionalize the process in order to provide an information base for periodical updates compatible with the cycle of the program evaluated. These precautions include:

- Training of planning team in the application of the model, which involves mastering the process of analysis, the theoretical model applied, the software and other inputs used for the development of the methodology;
- Training the team to provide basic information on updates compatible with the cycle of the process.

ANNEX I

SCORE AND STRATIFICATION OF SUB-BASINS

SCORE AND STRATIFICATION OF SUB-BASINS

BASIN	SUB-BASIN	ICE	ICL	PRIPMS	CH_2SM	CH_3AE	P_PGE	OBRAS	INVESTMENT	FAC1_1	FAC2_1	FAC3_1	ESTR
Corrego Av.MenSa(Cardoso)	4112201	0,24	0,56	2,00	0,75	0,46	0,75	24	14.384.707,53	5,5851	0,3294	-3,5903	1
Corrego Olaria (Taquaril)	4113100	0,23	0,62	15,00	0,75	0,41	0,48	17	9.494.213,70	4,2974	-0,7481	-2,3402	1
Piteiras	4111401	0,90	0,73	20,00	0,63	0,37	0,28	24	14.304.980,04	3,2159	2,6057	-0,3151	2
Leitão	4111605	0,51	0,73	1,00	0,52	0,32	0,58	7	3.210.111,36	2,7471	-1,7598	-2,8408	3
Leitão	4111604	0,57	0,68	28,00	0,64	0,40	0,30	9	4.706.549,19	2,6955	-1,3343	-1,0462	3
Corrego Freitas(Av.StaTereza)	4112900	0,54	0,71	14,00	0,65	0,33	0,36	9	5.208.474,18	2,6489	-1,1463	-1,4891	3
Av.Andradas (Vera Cruz)	4110018	0,44	0,67	13,00	0,65	0,33	0,48	2	819.407,00	2,6103	-3,0144	-2,3635	3
Av. Estrela de Belem	4130002	0,87	0,98	201,00	0,59	0,29	0,16	23	21.970.626,45	2,5256	4,6429	0,8060	2
Embaubas	4110900	0,73	0,75	91,00	0,60	0,33	0,29	13	8.534.613,80	2,5035	0,3515	-0,8171	4
Corrego do Nado	4140202	0,66	0,90	9,00	0,65	0,36	0,41	9	4.714.828,24	2,2381	-0,6542	-0,5221	3
Corrego Fazenda Velha	4140700	0,86	0,83	6,00	0,56	0,28	0,40	13	8.385.297,88	2,2363	0,7875	-1,0847	4
Corrego da Serra	4112003	0,60	0,72	11,00	0,41	0,22	0,38	8	3.463.212,57	2,0082	-1,0151	-2,6475	3
Taquaril (Av.Jequitinhonha)	4112702	0,74	0,72	51,00	0,52	0,25	0,46	4	2.716.619,04	1,9877	-1,5529	-2,2488	3
Vilarinho	4140106	0,89	0,98	130,00	0,52	0,25	0,00	21	22.015.865,20	1,9440	4,7655	1,2276	2
Ressaca	4130810	0,48	0,83	23,00	0,62	0,32	0,18	6	3.809.777,14	1,8140	-1,2642	-0,3720	3
Bonsucesso	4110402	0,59	0,87	10,00	0,65	0,38	0,12	7	4.487.689,64	1,7255	-0,8474	0,6035	4
Corrego Av.MenSa(Cardoso)	4112202	0,68	0,61	4,00	0,56	0,31	0,14	2	176.745,79	1,6554	-2,4313	-1,0013	3
Floresta	4140302	0,79	0,86	98,00	0,47	0,23	0,23	12	7.254.798,79	1,5962	0,7933	-0,8511	4
Gorduras (Av. Belmonte)	4131601	0,90	0,94	54,00	0,48	0,22	0,00	18	17.187.623,19	1,5446	3,6822	0,7334	2
Aglomerado Beira Linha	4131900	0,85	0,75	119,00	0,60	0,28	0,00	10	6.596.473,14	1,4803	0,2713	0,4758	4
Cebola	4132000	0,90	0,59	218,00	0,73	0,39	0,00	0	0,00	1,4418	-2,5323	0,8143	4
Lagoinha(Av.A.Carlos)	4111800	0,73	0,81	22,00	0,39	0,16	0,17	10	7.093.214,09	1,3251	0,5926	-1,4457	4
Set Capitão Eduardo	4120400	0,54	0,93	200,00	0,65	0,30	0,00	7	4.648.984,76	1,2601	-0,5177	0,9243	4
Corrego da Serra	4112005	0,69	0,76	32,00	0,35	0,18	0,21	7	3.217.730,34	1,2526	-0,5915	-1,9294	4
Av. Cândido M.A. de Oliveira	4130003	0,89	0,92	189,00	0,53	0,27	0,06	10	10.922.007,62	1,2384	1,5418	0,8041	2
Jatoba	4110109	0,64	0,73	40,00	0,66	0,32	0,00	1	401.000,00	1,2092	-2,2247	0,4211	4
Ressaca	4130817	0,90	0,89	17,00	0,52	0,24	0,20	7	7.561.167,35	1,1998	0,5634	-0,0695	4
Av.Nossa Sra. da Pietye	4130001	0,96	0,99	102,00	0,48	0,21	0,01	22	10.874.488,16	1,1729	3,3636	0,9077	2
Vilarinho	4140101	0,87	0,97	124,00	0,51	0,25	0,00	17	9.151.295,47	1,1612	2,2070	0,9575	2
Bonsucesso	4110401	0,82	0,98	36,00	0,58	0,33	0,02	9	7.300.041,53	1,0465	0,7605	1,5292	4
Corrego Cachorro Magro	4113000	0,86	0,92	72,00	0,45	0,26	0,13	8	7.369.194,79	1,0349	0,7395	0,1352	4

Ressaca	4130819	0,82	0,79	7,00	0,45	0,22	0,04	8	4.923.658,04	1,0340	0,0648	-0,3388	4
Tejuco	4111102	0,92	0,83	186,00	0,48	0,25	0,13	7	4.801.713,54	1,0198	0,0819	-0,0742	4
Pampulha	4131202	0,81	0,96	62,00	0,50	0,24	0,12	12	3.720.901,31	0,9880	0,5816	0,2308	4
Itaituba	4112501	0,77	0,96	42,00	0,45	0,18	0,12	13	5.482.505,02	0,9733	1,0656	-0,2441	4
Ressaca	4130804	0,71	0,83	8,00	0,49	0,29	0,05	2	2.754.382,80	0,9203	-1,2087	0,0934	4
Ressaca	4130806	0,90	0,92	18,00	0,42	0,19	0,04	8	12.607.987,10	0,9158	1,8766	0,2502	2
Vilarinho	4140104	0,81	1,00	129,00	0,53	0,26	0,00	10	8.907.723,96	0,9091	1,3458	1,2217	2
Gorduras (Av. Belmonte)	4131603	0,75	0,85	60,00	0,53	0,28	0,16	0	0,00	0,8404	-1,8533	-0,1817	4
São Jose	4120300	0,89	0,93	55,00	0,65	0,33	0,01	6	2.926.699,07	0,8164	-0,3391	1,6505	4
Av.Andradas (São Geraldo)	4110017	0,85	0,85	100,00	0,51	0,27	0,23	0	0,00	0,8098	-1,6899	-0,3384	4
Jatoba	4110102	0,89	0,85	76,00	0,56	0,32	0,00	3	2.561.459,96	0,7269	-0,8128	1,0974	4
Piteiras	4111403	0,93	0,86	41,00	0,28	0,13	0,24	9	3.571.400,06	0,7216	0,4924	-1,6043	4
Rua Cascalheiro (Bairro Marize)	4140002	0,93	0,72	145,00	0,48	0,28	0,00	2	617.729,92	0,7081	-1,3821	0,1637	4
Corrego Estrada da Pedreira	4140005	0,44	0,99	46,00	0,48	0,28	0,01	3	2.264.761,48	0,7056	-1,1358	0,3688	4
Corrego da AABB	4130402	0,01	0,91	125,00	0,36	0,14	0,00	0	0,00	0,7018	-2,4099	-1,7725	3
Ressaca	4130802	0,87	0,97	5,00	0,50	0,25	0,06	8	5.676.954,17	0,7018	0,6581	0,7990	4
Engenho Nogueira	4131003	0,48	0,93	3,00	0,49	0,22	0,06	2	385.180,91	0,6678	-1,5839	-0,2908	4
São Geraldo	4112800	0,86	0,93	43,00	0,41	0,20	0,11	8	4.221.028,65	0,6620	0,4102	-0,1549	4
Jatoba	4110115	0,94	0,99	71,00	0,50	0,29	0,11	7	4.300.031,17	0,6572	0,3785	0,9557	4
Acaba Mundo	4111901	0,79	0,74	87,00	0,30	0,20	0,02	5	1.644.851,61	0,6424	-0,7643	-1,0733	4
Corrego da AABB	4130401	0,01	0,96	161,00	0,36	0,18	0,00	0	0,00	0,6370	-2,3244	-1,3811	3
Olhos d'agua (Av.F;N. de Lima)	4130500	0,29	0,94	61,00	0,36	0,15	0,00	5	2.408.132,18	0,6356	-0,8997	-1,1059	4
Cachoeirinha	4131301	0,92	0,97	110,00	0,40	0,14	0,02	12	10.058.186,90	0,6293	2,2022	0,2382	2
Corrego do Navio (Av.Belem)	4112601	0,98	0,87	190,00	0,56	0,28	0,00	5	3.284.132,40	0,6246	-0,2092	1,1493	4
Jatoba	4110113	0,86	0,99	88,00	0,55	0,25	0,00	8	5.533.301,11	0,6133	0,6565	1,2420	4
Rua Martins Soares (V.Alegre)	4110002	0,91	0,97	202,00	0,44	0,22	0,07	11	3.826.443,13	0,6055	0,8311	0,4497	4
Engenho Nogueira	4131006	0,91	0,98	69,00	0,29	0,14	0,01	13	10.666.060,14	0,5602	2,5250	-0,0919	2
Cachoeirinha	4131302	0,96	1,00	75,00	0,35	0,13	0,01	18	7.772.191,23	0,5537	2,7004	0,1367	2
Taquaril (Av.Jequitinhonha)	4112701	0,81	0,85	140,00	0,48	0,22	0,02	3	1.775.458,08	0,5334	-0,8540	0,1054	4
Jatoba	4110104	0,95	0,95	35,00	0,54	0,27	0,08	4	2.710.933,53	0,4944	-0,2741	0,9688	4
Bonsucesso	4110403	0,93	0,99	16,00	0,49	0,24	0,02	9	4.550.712,38	0,4864	0,7811	1,0311	4
Corrego do Monjolo	4131800	0,88	1,00	211,00	0,60	0,38	0,00	2	1.725.001,00	0,4767	-0,8495	2,1589	4
Corrego do Nado	4140211	0,83	0,97	39,00	0,31	0,14	0,05	13	4.915.279,71	0,4651	1,3885	-0,4166	4
								55,37%	**59,21%**				
Jatoba	4110103	0,89	0,90	70,00	0,48	0,27	0,00	5	1.921.377,29	0,4578	-0,4009	0,7732	4
Arrudas – Sabara	4110020	1,00	1,00	212,00	0,80	0,40	0,00	0	0,00	0,4356	-1,3591	3,0842	4
Mergulhão	4130601	0,94	0,93	133,00	0,49	0,24	0,00	4	4.616.551,05	0,3941	0,1180	1,0017	4
Corrego Estrada do Sanatorio	4140006	0,58	0,98	48,00	0,55	0,22	0,00	1	826.388,00	0,3865	-1,3386	0,5666	4
Tejuco	4111101	0,93	0,99	192,00	0,35	0,17	0,00	11	7.437.801,95	0,3759	1,7389	0,3430	2

Barauna	4130300	0,32	0,97	163,00	0,36	0,19	0,00	1	221.334,12	0,3538	-1,6390	-0,6680	4
Corrego do Espia	4120100	0,98	0,88	217,00	0,60	0,32	0,00	0	0,00	0,3507	-1,3570	1,5516	4
Av.Andradas (Sta. Tereza)	4110013	0,78	0,97	56,00	0,29	0,14	0,04	13	2.319.719,00	0,3489	0,9052	-0,5525	4
Cachoeirinha	4131303	0,97	0,99	53,00	0,21	0,09	0,00	14	11.791.530,77	0,3366	3,1400	-0,3350	2
Corrego dos Macacos	4140900	0,99	1,00	256,00	0,63	0,34	0,00	3	1.730.797,60	0,3308	-0,4901	2,2158	4
Vilarinho	4140102	0,87	1,00	121,00	0,48	0,22	0,00	7	3.850.102,59	0,3119	0,4463	0,9416	4
Bonsucesso	4110404	0,92	0,96	19,00	0,42	0,23	0,00	9	1.941.050,20	0,3036	0,3643	0,6887	4
Av.Andradas (Caetano Furquim)	4110019	0,70	0,95	230,00	0,55	0,26	0,00	0	0,00	0,3029	-1,4965	0,8850	4
Gorduras (Av. Belmonte)	4131602	0,85	0,98	67,00	0,52	0,23	0,01	3	3.657.115,00	0,3011	-0,1705	0,9849	4
Corrego da Terra Vermelha	4140803	1,00	1,00	242,00	0,75	0,34	0,00	0	0,00	0,2544	-1,1990	2,6485	4
Corrego da Terra Vermelha	4140802	1,00	1,00	231,00	0,60	0,29	0,00	4	2.199.710,77	0,2478	-0,1665	1,9163	4
Av. Hum (Bairro Marize)	4140003	0,84	0,94	207,00	0,42	0,22	0,00	5	1.847.241,21	0,2459	-0,2476	0,4755	4
Jatoba	4110120	0,92	1,00	122,00	0,45	0,24	0,00	5	4.752.415,96	0,2371	0,4506	1,1075	4
Embira	4140402	0,92	1,00	204,00	0,33	0,14	0,00	11	6.656.426,60	0,2370	1,7006	0,1833	2
Jatoba	4110116	0,87	1,00	106,00	0,48	0,25	0,02	3	3.110.537,65	0,2217	-0,1795	1,0372	4
Corrego Av.Frei Andreoni	4110800	0,94	0,91	194,00	0,42	0,22	0,09	2	758.664,00	0,2100	-0,7367	0,1440	4
Floresta	4140305	0,78	1,00	206,00	0,61	0,28	0,00	0	0,00	0,2061	-1,3305	1,4956	4
Corrego da Terra Vermelha	4140801	0,98	0,94	209,00	0,48	0,22	0,00	6	2.090.426,99	0,2041	0,0950	0,9411	4
Corrego Sarandi (Contagem)	4130102	0,93	1,00	137,00	0,35	0,15	0,00	9	6.404.984,96	0,1780	1,4226	0,3664	2
Cor. J.Correia c/ Tamandua	4130005	0,94	1,00	253,00	0,63	0,31	0,00	1	301.730,00	0,1727	-0,9685	2,0098	4
Floresta	4140304	0,98	1,00	167,00	0,53	0,25	0,00	5	2.097.956,36	0,1566	0,0172	1,4635	4
Rua 52 (Bairro Granja Werneck)	4140004	0,88	0,93	107,00	0,51	0,24	0,04	0	0,00	0,1522	-1,2048	0,7409	4
Fazenda Capitão Eduardo	4120500	1,00	1,00	254,00	0,66	0,34	0,00	0	0,00	0,1491	-1,1071	2,3699	4
Jatoba	4110108	0,87	1,00	86,00	0,58	0,26	0,00	2	681.530,96	0,1444	-0,7723	1,4941	4
Vila Vista Alegre	4110003	0,95	1,00	213,00	0,56	0,28	0,00	2	2.000.352,00	0,1404	-0,4356	1,6860	4
Jatoba	4110110	1,00	1,00	152,00	0,50	0,22	0,00	5	4.151.083,92	0,1404	0,4734	1,3135	4
Corrego Bom Jesus (Contagem)	4130202	0,96	1,00	171,00	0,56	0,25	0,00	2	2.745.383,64	0,1284	-0,2708	1,5824	4
Corrego da Serra	4112004	0,79	0,91	24,00	0,13	0,06	0,06	9	4.215.007,60	0,1102	0,9337	-1,7034	4
Ferrugem/Riacho (Contagem)	4110300	0,88	0,98	169,00	0,31	0,16	0,04	7	3.505.580,83	0,0911	0,6011	-0,0967	4
Vilarinho	4140105	0,99	1,00	223,00	0,45	0,21	0,00	7	2.705.323,60	0,0845	0,5028	1,0635	4
Jatoba	4110106	1,00	1,00	117,00	0,55	0,28	0,00	2	1.604.464,00	0,0670	-0,4174	1,7556	4
Jatoba	4110112	1,00	1,00	139,00	0,62	0,30	0,00	0	0,00	0,0387	-1,0125	2,0860	4
Ressaca	4130821	0,89	0,94	26,00	0,35	0,17	0,01	4	2.938.955,26	0,0353	0,0681	0,0788	4
Corrego do Navio (Av.Belem)	4112602	0,90	0,99	33,00	0,38	0,14	0,00	5	5.297.005,43	0,0193	0,7313	0,3099	4

Floresta	4140301	0,93	0,95	181,00	0,36	0,16	0,00	6	3.095.081,91	0,0114	0,4367	0,2172	4
Media	4000000	0,90	0,96	128,50	0,35	0,16	0,04	4	2.382.868,36	0,0000	0,0000	0,0000	4
Jatoba	4110111	1,00	1,00	128,00	0,60	0,27	0,00	1	642.012,08	-0,0023	-0,6973	1,8257	4
Vilarinho	4140108	0,96	1,00	220,00	0,40	0,18	0,00	7	2.281.042,93	-0,0111	0,4736	0,6721	4
Rua Luiz C. Alves	4140500	0,97	1,00	199,00	0,48	0,26	0,00	3	1.109.686,78	-0,0123	-0,3275	1,3703	4
Acaba Mundo	4111903	0,85	0,86	25,00	0,17	0,09	0,07	5	1.206.406,64	-0,0165	-0,1219	-1,5809	4
Cor. J.Correia (Faz.C.Eduardo)	4130006	0,98	1,00	255,00	0,61	0,27	0,00	0	0,00	-0,0210	-0,9697	1,8881	4
Corrego do Sumidouro	4140007	0,78	1,00	216,00	0,51	0,22	0,00	0	0,00	-0,0243	-1,1219	0,9587	4
Nova Cintra	4110004	0,80	1,00	219,00	0,49	0,22	0,00	1	389.532,00	-0,0261	-0,8808	0,8899	4
Corrego do Nado	4140201	0,93	1,00	83,00	0,37	0,19	0,03	5	2.352.484,28	-0,0292	0,2242	0,4870	4
Barreiro	4110207	0,94	0,99	58,00	0,45	0,23	0,03	2	1.380.082,39	-0,0303	-0,4060	0,9659	4
Corrego do Nado	4140203	0,79	0,96	31,00	0,39	0,20	0,00	2	36.181,13	-0,0386	-0,8304	0,2416	4
Pampulha	4131203	1,00	0,96	155,00	0,47	0,20	0,11	0	0,00	-0,0397	-0,8741	0,4764	4
Engenho Nogueira	4131004	0,77	0,96	45,00	0,45	0,19	0,01	0	0,00	-0,0403	-1,1332	0,3469	4
Corrego Bom Jesus (Contagem)	4130203	0,84	1,00	108,00	0,49	0,23	0,00	1	218.141,00	-0,0452	-0,8731	1,0120	4
Cercadinho	4110703	0,92	0,94	147,00	0,33	0,15	0,02	5	1.894.476,21	-0,0734	0,1235	-0,0224	4
Av.Andradas (V.São Rafael)	4110014	0,88	0,98	81,00	0,30	0,13	0,05	5	2.918.603,00	-0,0829	0,3598	-0,2671	4
Jatoba	4110105	0,97	0,96	30,00	0,40	0,16	0,05	3	1.791.055,08	-0,0935	-0,0901	0,2681	4
Jatoba	4110101	0,98	1,00	165,00	0,54	0,27	0,00	0	0,00	-0,1038	-0,8988	1,6579	4
Jatoba	4110107	0,90	0,96	187,00	0,45	0,23	0,00	0	0,00	-0,1088	-0,9779	0,8255	4
Pastinho (Av.Pedro II)	4111708	0,90	0,94	47,00	0,35	0,12	0,04	3	1.750.930,00	-0,1149	-0,1545	-0,2346	4
Corrego do Angu	4131700	0,83	1,00	221,00	0,42	0,20	0,00	1	1.096.998,03	-0,1264	-0,6308	0,6488	4
Açudinho (Av. Saramenha)	4131500	0,97	1,00	232,00	0,38	0,16	0,00	4	3.898.123,68	-0,1358	0,4958	0,6258	4
Barreiro	4110204	0,96	1,00	92,00	0,34	0,16	0,00	4	4.695.919,72	-0,1456	0,6650	0,4712	4
Pampulha	4131201	0,85	0,99	154,00	0,33	0,15	0,03	4	720.878,80	-0,1774	-0,1969	-0,0623	4
Piteiras	4111402	0,92	0,98	63,00	0,22	0,09	0,05	7	3.626.580,00	-0,1841	0,9147	-0,6415	4
Corrego do Nado	4140205	0,78	1,00	38,00	0,32	0,16	0,00	3	196.012,17	-0,2194	-0,4870	0,0374	4
Ressaca	4130807	0,99	0,97	77,00	0,40	0,15	0,00	3	2.181.430,52	-0,2259	0,0791	0,5048	4
Jatoba	4110117	0,99	1,00	159,00	0,41	0,22	0,00	2	1.204.606,44	-0,2300	-0,2469	1,0094	4
Ressaca	4130803	0,97	1,00	65,00	0,41	0,18	0,00	2	2.280.474,17	-0,2403	-0,0275	0,8056	4
Ressaca	4130805	0,87	0,91	34,00	0,28	0,13	0,03	1	316.712,08	-0,2433	-0,6718	-0,5282	4
Corrego do Nado	4140204	0,89	0,98	84,00	0,34	0,16	0,00	3	1.411.233,76	-0,2445	-0,1290	0,2225	4
Barreiro	4110205	1,00	1,00	138,00	0,39	0,20	0,00	3	1.312.644,09	-0,2480	-0,0566	0,8938	4
Av. Luzitânia (Mannesmann)	4110001	1,00	1,00	251,00	0,41	0,19	0,00	2	2.226.760,00	-0,2577	-0,0032	0,8857	4
Ressaca	4130816	0,98	0,96	50,00	0,26	0,11	0,00	6	3.372.760,38	-0,2695	0,7880	-0,1618	4
Salgado Filho	4110005	0,89	1,00	237,00	0,39	0,16	0,00	2	1.321.676,00	-0,2696	-0,2623	0,4760	4
Vilarinho	4140107	0,99	1,00	239,00	0,34	0,15	0,00	4	3.162.599,94	-0,2714	0,4774	0,4545	4
Jatoba	4110122	0,99	0,99	89,00	0,35	0,18	0,00	3	2.478.234,76	-0,2793	0,2021	0,5930	4
Vilarinho	4140103	0,99	1,00	241,00	0,41	0,21	0,00	1	884.711,00	-0,2940	-0,4028	0,9871	4

Jatoba	4110118	0,96	1,00	131,00	0,43	0,23	0,00	0	0,00	-0,2948	-0,7444	1,0980	4
Engenho Nogueira	4131001	1,00	0,97	27,00	0,24	0,08	0,02	4	5.810.834,47	-0,3027	1,0609	-0,3288	4
Ressaca	4130809	0,98	1,00	29,00	0,43	0,19	0,00	1	1.244.000,00	-0,3047	-0,3209	0,9220	4
Vila Guaratã	4110006	0,96	0,98	95,00	0,27	0,11	0,06	3	2.648.601,00	-0,3119	0,2808	-0,3408	4
Floresta	4140303	0,98	1,00	229,00	0,46	0,21	0,00	0	0,00	-0,3183	-0,7136	1,1142	4
Barreiro	4110208	0,94	1,00	153,00	0,33	0,16	0,00	1	2.956.128,00	-0,3371	0,0268	0,4341	4
Corrego do Caixeta	4140600	0,93	1,00	238,00	0,36	0,17	0,00	1	1.285.783,32	-0,3429	-0,3194	0,5318	4
Ressaca	4130801	0,99	1,00	93,00	0,43	0,20	0,00	1	12.629,11	-0,3519	-0,5266	0,9824	4
Tejuco	4111103	0,90	0,99	226,00	0,32	0,13	0,00	2	2.077.116,00	-0,3660	-0,0189	0,1010	4
Tejuco	4111104	0,93	0,97	233,00	0,31	0,14	0,00	3	295.557,02	-0,3724	-0,2272	0,0750	4
Jatoba	4110114	0,97	1,00	85,00	0,37	0,21	0,00	1	320.330,00	-0,3737	-0,4583	0,7945	4
Cercadinho	4110702	0,96	1,00	178,00	0,29	0,12	0,00	4	2.798.299,63	-0,3851	0,4837	0,1061	4
Barreiro	4110206	0,99	1,00	146,00	0,33	0,14	0,00	4	1.138.351,80	-0,4061	0,1859	0,3957	4
Jatoba	4110125	0,99	0,99	173,00	0,31	0,16	0,00	2	1.846.551,48	-0,4086	0,0382	0,3871	4
Barreiro	4110210	0,99	1,00	175,00	0,30	0,15	0,00	4	1.113.623,36	-0,4252	0,1915	0,3078	4
Av.Andradas (Esplanada)	4110016	0,94	0,99	235,00	0,31	0,13	0,00	2	1.789.633,80	-0,4322	0,0123	0,1569	4
Barreiro	4110209	0,99	1,00	59,00	0,30	0,12	0,00	2	3.615.992,09	-0,4340	0,4291	0,2381	4
Av.Tereza Cristina (C.Prates)	4110008	0,97	0,99	82,00	0,19	0,07	0,01	6	3.387.890,23	-0,4529	0,9667	-0,5501	4
Itaituba	4112502	0,95	1,00	127,00	0,36	0,14	0,00	1	865.091,00	-0,4614	-0,2844	0,4421	4
Ressaca	4130814	0,99	1,00	73,00	0,30	0,12	0,00	4	1.587.804,55	-0,4634	0,3276	0,1942	4
Rua Democrata (Vila São Paulo)	4131400	1,00	1,00	214,00	0,38	0,17	0,00	1	445.536,00	-0,4692	-0,3281	0,6776	4
Embira	4140401	0,94	1,00	148,00	0,27	0,11	0,00	5	957.499,74	-0,4713	0,3118	-0,0810	4
Corrego do Nado	4140208	0,93	0,99	37,00	0,26	0,10	0,00	3	1.930.205,32	-0,4812	0,2166	-0,1546	4
Corrego do Navio (Av.Belem)	4112603	0,97	0,99	135,00	0,32	0,12	0,01	2	929.706,00	-0,4914	-0,0760	0,1733	4
D.João VI	4110600	0,99	1,00	245,00	0,33	0,15	0,00	2	297.378,00	-0,5031	-0,1907	0,4636	4
Corrego Av. dos Esportes	4111300	0,92	1,00	236,00	0,19	0,07	0,00	6	1.944.222,99	-0,5112	0,6738	-0,5267	4
Cercadinho	4110701	1,00	0,99	198,00	0,17	0,05	0,00	7	3.785.059,53	-0,5139	1,2583	-0,5425	4
Jatoba	4110119	0,99	1,00	157,00	0,29	0,17	0,00	1	789.940,00	-0,5229	-0,2189	0,4350	4
Corrego da Mata(Av.S.Brandão)	4112302	0,99	1,00	225,00	0,22	0,07	0,00	5	3.375.435,91	-0,5346	0,9018	-0,2989	4
Jatoba	4110123	1,00	1,00	116,00	0,32	0,19	0,00	0	0,00	-0,5382	-0,5029	0,6516	4
Leitão	4111607	0,96	0,98	78,00	0,09	0,04	0,02	9	1.726.832,58	-0,5464	1,1325	-1,0999	4
Corrego do Nado	4140206	0,80	0,96	96,00	0,15	0,06	0,00	3	811.562,00	-0,5471	-0,0709	-1,1037	4
Corrego do Nado	4140209	0,97	1,00	57,00	0,33	0,12	0,00	1	686.295,99	-0,5567	-0,2264	0,2932	4
Rua Areia Branca (Sta.Luzia)	4130004	0,91	1,00	250,00	0,27	0,09	0,00	2	1.500.025,76	-0,5608	0,0454	-0,1786	4

Corrego Betânia	4110500	0,91	1,00	197,00	0,30	0,11	0,00	1	403.560,00	-0,5644	-0,3246	0,0275	4
Barreiro	4110202	0,99	1,00	191,00	0,32	0,17	0,00	0	0,00	-0,5706	-0,4825	0,5215	4
Av. Vilarinho c/ Crist.Machado	4140001	0,95	1,00	195,00	0,22	0,11	0,00	3	1.225.632,00	-0,5987	0,1938	-0,2013	4
Engenho Nogueira	4131002	0,97	0,96	12,00	0,22	0,07	0,00	3	1.162.300,00	-0,6044	0,1889	-0,4450	4
Corrego Av.MenSa(Cardoso)	4112205	1,00	1,00	118,00	0,25	0,10	0,00	3	1.277.136,71	-0,6136	0,2571	-0,0211	4
Suzana (Av.Sebastião Brito)	4131100	0,97	0,99	205,00	0,22	0,08	0,00	4	1.005.344,00	-0,6186	0,3241	-0,3395	4
Ressaca	4130808	1,00	0,98	74,00	0,31	0,13	0,00	0	0,00	-0,6258	-0,4380	0,2017	4
Ressaca	4130812	0,93	0,96	21,00	0,23	0,08	0,00	1	910.879,97	-0,6290	-0,1592	-0,4347	4
Av.Andradas (Conj.Esplanada)	4110015	1,00	1,00	151,00	0,25	0,09	0,00	4	964.898,63	-0,6311	0,3528	-0,1191	4
Barreiro	4110203	0,99	1,00	105,00	0,29	0,14	0,00	1	96.410,00	-0,6316	-0,2638	0,2693	4
Santa Efigênia	4112100	0,84	0,98	103,00	0,17	0,05	0,01	1	1.736.224,00	-0,6401	-0,0331	-0,9051	4
Pastinho (Av.Pedro II)	4111701	0,92	1,00	177,00	0,24	0,09	0,00	1	786.006,00	-0,6758	-0,1339	-0,2137	4
Jatoba	4110121	1,00	1,00	172,00	0,29	0,15	0,00	0	0,00	-0,6778	-0,3795	0,3185	4
Av.Andradas (Pq. Municipal)	4110012	0,89	0,98	208,00	0,11	0,04	0,00	4	1.778.438,77	-0,6848	0,4734	-1,0677	4
Pastinho (Av.Pedro II)	4111711	1,00	1,00	185,00	0,34	0,11	0,00	0	0,00	-0,6983	-0,3599	0,3008	4
Leitão	4111601	0,97	0,85	188,00	0,02	0,00	0,00	2	1.317.968,00	-0,7111	0,1038	-1,9023	4
Corrego Av.MenSa(Cardoso)	4112204	0,97	0,97	114,00	0,16	0,07	0,01	2	1.303.171,40	-0,7118	0,1791	-0,6175	4
Jatoba	4110124	0,96	0,99	170,00	0,22	0,10	0,00	1	221.403,27	-0,7243	-0,1891	-0,2548	4
Ressaca	4130818	0,90	1,00	104,00	0,23	0,10	0,00	0	0,00	-0,7287	-0,4115	-0,2628	4
Pastinho (Av.Pedro II)	4111702	0,99	1,00	179,00	0,31	0,10	0,00	0	0,00	-0,7289	-0,3413	0,1721	4
Pastinho (Av.Pedro II)	4111710	1,00	1,00	182,00	0,25	0,08	0,00	1	1.282.924,21	-0,7444	0,0878	-0,0865	4
Ressaca	4130820	0,88	0,92	68,00	0,14	0,04	0,00	0	0,00	-0,7456	-0,4530	-1,2013	4
Engenho Nogueira	4131007	0,97	1,00	183,00	0,15	0,06	0,01	3	1.434.521,78	-0,7514	0,3903	-0,5921	4
Corrego Av.MenSa(Cardoso)	4112203	1,00	1,00	112,00	0,26	0,09	0,00	1	257.257,00	-0,7615	-0,1108	-0,0268	4
Santa Inês (R.Concei.Para)	4112402	0,98	1,00	247,00	0,22	0,09	0,00	1	92.784,30	-0,8051	-0,1178	-0,1897	4
Corrego da Serra	4112001	0,94	0,98	64,00	0,05	0,01	0,00	2	4.277.327,66	-0,8146	0,8501	-1,2048	4
Santa Inês (R.Concei.Para)	4112401	1,00	1,00	248,00	0,19	0,07	0,00	2	986.340,00	-0,8203	0,2345	-0,3736	4
Leitão	4111603	0,95	0,96	176,00	0,10	0,03	0,03	1	276.892,00	-0,8373	-0,0733	-1,2233	4
Lagoa da Pampulha	4130900	0,83	0,99	203,00	0,13	0,05	0,00	0	0,00	-0,8399	-0,3768	-1,0044	4
Rio das Velhas (Sabara)	4120200	1,00	1,00	243,00	0,40	0,00	0,00	0	0,00	-0,8547	-0,2195	-0,0230	4
Barreiro	4110201	1,00	1,00	193,00	0,40	0,00	0,00	0	0,00	-0,8547	-0,2195	-0,0230	4
Leitão	4111610	0,98	0,99	44,00	0,05	0,02	0,02	5	1.259.756,64	-0,8645	0,7563	-1,2100	4
Corrego Av. Magi Salomon	4111000	0,96	1,00	227,00	0,21	0,07	0,00	0	0,00	-0,8696	-0,2433	-0,3392	4
Av.Tereza Cristina (P.Eustaquio)	4110007	0,99	1,00	196,00	0,16	0,05	0,00	1	1.892.306,00	-0,8708	0,3198	-0,5035	4
Piteiras	4111404	0,99	1,00	144,00	0,12	0,04	0,00	3	1.648.278,00	-0,8713	0,5564	-0,7102	4
Leitão	4111608	0,99	1,00	80,00	0,07	0,02	0,00	6	1.230.522,36	-0,8721	0,8979	-1,0235	4
Pastinho (Av.Pedro II)	4111709	0,99	1,00	156,00	0,25	0,07	0,00	0	0,00	-0,8786	-0,2109	-0,2072	4
Pastinho (Av.Pedro II)	4111703	0,93	1,00	141,00	0,18	0,07	0,00	0	0,00	-0,8816	-0,2555	-0,5066	4
Mergulhão	4130602	1,00	1,00	224,00	0,21	0,09	0,00	0	0,00	-0,8888	-0,1934	-0,1971	4

Pastinho (Av.Pedro II)	4111705	1,00	1,00	143,00	0,23	0,07	0,00	0	0,00	-0,9058	-0,1778	-0,2230	4
Pastinho (Av.Pedro II)	4111704	1,00	1,00	66,00	0,19	0,06	0,00	1	323.528,00	-0,9077	0,0338	-0,3854	4
Corrego do Nado	4140207	1,00	1,00	180,00	0,14	0,05	0,00	2	204.011,56	-0,9545	0,1927	-0,6113	4
Leitão	4111602	0,96	0,93	111,00	0,04	0,02	0,00	1	203.873,00	-0,9574	-0,0133	-1,4120	4
Corrego da Mata(Av.S.Brandão)	4112301	1,00	1,00	234,00	0,16	0,05	0,00	1	564.176,00	-0,9596	0,1291	-0,5405	4
Engenho Nogueira	4131005	1,00	1,00	90,00	0,09	0,12	0,00	0	0,00	-0,9599	-0,1327	-0,4164	4
Ressaca	4130811	1,00	1,00	79,00	0,14	0,04	0,00	1	938.920,16	-0,9728	0,2138	-0,6436	4
Corrego do Nado	4140210	1,00	1,00	184,00	0,14	0,05	0,00	1	354.592,00	-0,9801	0,1001	-0,5955	4
Pastinho (Av.Pedro II)	4111706	1,00	1,00	160,00	0,19	0,04	0,00	0	0,00	-1,0057	-0,0897	-0,4671	4
Ressaca	4130815	0,98	1,00	94,00	0,14	0,05	0,00	0	0,00	-1,0123	-0,1009	-0,5981	4
Acaba Mundo	4111912	1,00	1,00	142,00	0,07	0,01	0,00	2	1.987.687,00	-1,0187	0,6173	-0,9728	4
Pastinho (Av.Pedro II)	4111707	1,00	1,00	158,00	0,16	0,05	0,00	0	0,00	-1,0211	-0,0767	-0,5183	4
Rua Guaicurus (Pça Estação)	4110011	1,00	1,00	240,00	0,09	0,02	0,00	2	858.000,00	-1,0252	0,3899	-0,8601	4
Tijuco	4130700	1,00	1,00	210,00	0,12	0,05	0,00	1	118.650,00	-1,0278	0,0937	-0,6887	4
Av.Tereza Cristina (Centro)	4110010	1,00	1,00	246,00	0,14	0,04	0,00	1	0,00	-1,0328	0,0774	-0,6574	4
Corrego Av. Ressaca	4111200	0,96	1,00	249,00	0,13	0,04	0,00	0	0,00	-1,0404	-0,0910	-0,7521	4
Av.Tereza Cristina (B.Preto)	4110009	0,99	1,00	252,00	0,13	0,03	0,00	1	153.725,00	-1,0404	0,1115	-0,7197	4
Corrego da Mata(Av.S.Brandão)	4112303	0,98	1,00	228,00	0,14	0,04	0,00	0	0,00	-1,0466	-0,0665	-0,6557	4
Leitão	4111614	1,00	1,00	162,00	0,13	0,05	0,00	0	0,00	-1,0505	-0,0513	-0,6014	4
Acaba Mundo	4111906	0,98	0,98	97,00	0,04	0,01	0,00	2	451.372,00	-1,0615	0,3110	-1,2404	4
Corrego Pints (Av.Fr.Sa)	4111501	0,99	0,99	109,00	0,07	0,03	0,02	0	0,00	-1,0968	-0,0082	-1,0182	4
Mergulhão	4130603	1,00	1,00	215,00	0,08	0,04	0,00	0	0,00	-1,1403	0,0263	-0,8356	4
Leitão	4111613	1,00	1,00	101,00	0,10	0,02	0,00	0	0,00	-1,1417	0,0294	-0,8193	4
Acaba Mundo	4111905	0,94	1,00	126,00	0,04	0,00	0,00	1	99.520,00	-1,1430	0,1499	-1,2268	4
Tejuco	4111105	1,00	1,00	244,00	0,09	0,03	0,00	0	0,00	-1,1472	0,0341	-0,8358	4
Corrego da Serra	4112006	1,00	1,00	174,00	0,08	0,03	0,00	0	0,00	-1,1486	0,0350	-0,8449	4
Leitão	4111606	1,00	0,99	52,00	0,05	0,01	0,00	1	119.592,00	-1,1511	0,2007	-1,1268	4
Corrego Pints (Av.Fr.Sa)	4111503	1,00	1,00	166,00	0,09	0,02	0,00	0	0,00	-1,1539	0,0400	-0,8524	4
Corrego Pints (Av.Fr.Sa)	4111502	1,00	1,00	132,00	0,07	0,01	0,00	1	199.609,02	-1,1546	0,2254	-0,9888	4
Acaba Mundo	4111908	1,00	1,00	49,00	0,05	0,01	0,00	1	225.686,00	-1,1815	0,2543	-1,0599	4
Corrego da Serra	4112002	0,98	0,99	136,00	0,05	0,01	0,00	0	0,00	-1,1853	0,0459	-1,1508	4
Acaba Mundo	4111909	0,99	1,00	134,00	0,06	0,02	0,00	0	0,00	-1,1856	0,0585	-0,9900	4
Leitão	4111612	1,00	1,00	168,00	0,08	0,01	0,00	0	0,00	-1,1880	0,0701	-0,9360	4
Acaba Mundo	4111902	0,95	1,00	115,00	0,03	0,01	0,00	0	0,00	-1,1952	0,0354	-1,2036	4

Acaba Mundo	4111904	0,99	1,00	149,00	0,07	0,01	0,00	0	0,00	-1,2000	0,0740	-1,0051	4
Leitão	4111611	1,00	1,00	123,00	0,06	0,02	0,00	0	0,00	-1,2003	0,0807	-0,9703	4
Acaba Mundo	4111910	1,00	1,00	150,00	0,06	0,02	0,00	0	0,00	-1,2081	0,0875	-0,9908	4
Acaba Mundo	4111907	1,00	1,00	120,00	0,06	0,01	0,00	0	0,00	-1,2196	0,0979	-1,0134	4
Acaba Mundo	4111911	0,99	1,00	164,00	0,04	0,01	0,00	0	0,00	-1,2238	0,0927	-1,0804	4
Ressaca	4130813	1,00	1,00	99,00	0,04	0,01	0,00	0	0,00	-1,2377	0,1135	-1,0645	4
Leitão	4111609	1,00	1,00	113,00	0,03	0,01	0,00	0	0,00	-1,2580	0,1314	-1,1160	4
Corrego Bom Jesus (Contagem)	4130201	1,00	1,00	222,00	0,00	0,00	0,00	0	0,00	-1,3062	0,1736	-1,2407	4
								997	**612.397.168,33**				

ANNEX II

CLASSIFICATION OF PUs AND SUMMARY OF TOTALS

CLASSIFICATION OF PU ACCORDING TO ISAVC AND IQVU

ISAVC PRIORITY	UP	NAME OF PU	ISAVC	STRATUM
1	21	Cafezal	3.32	1
2	26	Taquaril	3.27	1
3	60	Morro das Pedras	2.18	2
4	20	Barragem	2.07	2
5	56	Jardim Felicidade	1.88	2
6	32	Ribeiro de Abreu	1.35	3
7	33	Belmonte	1.17	3
8	48	Prado Lopes	1.17	3
9	28	Baleia	1.12	3
10	78	Céu Azul	1.05	3
11	73	Mantiqueira/Sesc	1.04	3
12	7	Olhos D'Água	0.99	3
13	29	Mariano de Abreu	0.90	3
14	31	Capitão Eduardo	0.83	3
15	35	São Paulo/Goiânia	0.79	3
16	54	Tupi/Floramar	0.76	3
17	41	Jardim Montanhês	0.75	3
18	57	Cabana	0.72	3
19	38	Concórdia	0.69	3
20	51	Furquim Werneck	0.64	3
21	55	Primeiro de Maio	0.55	3
22	37	Cachoeirinha	0.51	3
23	53	São Bernardo	0.51	3
24	4	Barreiro de Cima	0.50	3
25	71	São Francisco	0.49	3
26	76	Jardim Europa	0.48	3
27	80	São João Batista	0.42	3
28	34	Gorduras	0.42	3
29	43	Antônio Carlos	0.40	3
30	63	Garças/Braúnas	0.39	3
31	36	Cristiano Machado	0.35	3
32	27	Santa Efigênia	0.33	3
33	23	Boa Vista	0.33	3
34	5	Jatobá	0.32	3
35	47	Santa Maria	0.26	3
36	74	Serra Verde	0.21	3
37	75	Piratininga	0.20	3
38	50	Isidoro Norte	0.19	3

ISAVC PRIORITY	NAME OF PU	IQVU 1994	Class
4	Barragem	0.328	VI
28	Gorduras	0.333	VI
1	Cafezal	0.334	VI
8	Prado Lopes	0.337	VI
5	Jardim Felicidade	0.340	VI
12	Olhos D`Agua	0.340	VI
40	Confisco	0.352	VI
8	Baleia	0.363	VI
2	Taquaril	0.363	VI
17	Jardim Montanhês	0.368	VI
6	Ribeiro de Abreu	0.384	V
13	Mariano de Abreu	0.385	V
3	Morro das Pedras	0.389	V
20	Furquim Werneck	0.398	V
38	Isidoro Norte	0.398	V
18	Cabana	0.404	V
24	Barreiro de Cima	0.407	V
17	Tupi/Floramar	0.407	V
64	Barreiro Sul	0.410	V
34	Jatobá	0.410	V
27	São João Batista	0.410	V
14	Capitão Eduardo	0.411	V
23	São Bernardo	0.414	V
48	Sarandi	0.414	V
52	Lindéa	0.415	V
36	Serra Verde	0.423	IV
39	Jaqueline	0.424	IV
11	Mantiqueira/Sesc	0.425	IV
7	Belmonte	0.426	IV
45	Copacabana	0.427	IV
15	São Paulo/Goiânia	0.427	IV
10	Céu Azul	0.431	IV
42	Camargos	0.431	IV
51	Bairro Indústrias	0.435	IV
47	Glória	0.435	IV
30	Garças/Braúnas	0.437	IV
33	Boa Vista	0.438	IV
76	Santa Inês	0.442	IV

ISAVC PRIORITY	NAME OF PU	IQVU 2000	Classe	NOREG
73	UFMG	0.314		PAMPULHA
	Cafezal (Aglom. Serra)* **	**0.345**	**IV**	**CENTRO-SUL**
4	Barragem	0.347	IV	CENTRO-SUL
14	Capitão Eduardo	0.358	IV	NORDESTE
8	Prado Lopes	0.369	IV	NOROESTE
64	Barreiro-Sul	0.373	IV	BARREIRO
3	Morro das Pedras	0.385	IV	OESTE
17	Jardim Montanhês	0.395	IV	NOROESTE
12	Olhos D'Água	0.397	IV	BARREIRO
13	Mariano de Abreu	0.398	IV	LESTE
5	Jardim Felicidade	0.421	IV	NORTE
51	Bairro das Indústrias	0.430	IV	BARREIRO
38	Isidoro Norte	0.430	IV	NORTE
42	Camargos	0.434	IV	NOROESTE
2	Taquaril	0.435	IV	LESTE
40	Confisco	0.437	IV	PAMPULHA
20	Furquim Werneck/Jardim Felicidade	0.439	IV	NORTE
6	Ribeiro de Abreu	0.442	IV	NORDESTE
28	Gorduras	0.455	IV	NORDESTE
9	Baleia	0.463	IV	LESTE
11	Mantiqueira/Sesc	0.465	IV	VENDA NOVA
39	Jaqueline	0.466	IV	NORTE
18	Cabana	0.469	IV	OESTE
36	Serra Verde	0.476	III	VENDA NOVA
37	Piratininga	0.486	III	VENDA NOVA
24	Barreiro de Cima	0.487	III	BARREIRO
7	Belmonte	0.489	III	NORDESTE
30	Garças/Braúnas	0.489	III	PAMPULHA
27	São João Batista	0.490	III	VENDA NOVA
34	Jatobá	0.497	III	BARREIRO
52	Lindéia	0.498	III	BARREIRO
10	Céu Azul	0.498	III	VENDA NOVA
23	São Bernardo	0.499	III	NORTE
21	Primeiro de Maio	0.501	III	NORTE
45	Copacabana	0.505	III	VENDA NOVA
17	Tupi/Floramar	0.510	III	NORTE
22	Cachoeirinha	0.511	III	NORDESTE
39	Glória	0.512	III	NOROESTE

39	49	Jaqueline	0,16	3
40	72	Confisco	0,14	3
41	16	Serra	0,11	3
42	45	Camargos	0,11	3
43	25	Pompéia	0,07	3
44	77	Venda Nova	0,07	3
45	79	Copacabana	0,06	3
46	62	Estoril/Buritis/Pilar Oeste	0,04	3
47	39	Glória	0,03	3
48	67	Sarandi	0,02	3
49	58	Jardim América	-0,02	3
50	66	Jaraguá	-0,02	3
51	1	Bairro das Indústrias	-0,03	3
52	2	Lindéia	-0,06	3
53	19	Belvedere	-0,09	3
54	61	Betânia	-0,16	3
55	6	Cardoso	-0,17	3
56	40	Abílio Machado	-0,17	3
57	69	Ouro Preto	-0,18	3
58	46	PUC	-0,34	4
59	17	Mangabeiras	-0,34	4
60	52	Planalto	-0,37	4
61	3	Barreiro de Baixo	-0,38	4
62	68	Castelo	-0,44	4
63	42	Caiçara	-0,44	4
64	8	Barreiro-Sul	-0,46	4
65	18	São Bento/Sta, Lúcia	-0,49	4
66	64	Santa Amélia	-0,61	4
67	11	Francisco Sales	-0,61	4
68	24	Floresta/Santa Tereza	-0,62	4
69	44	Padre Eustáquio	-0,65	4
70	59	Barroca	-0,66	4
71	22	Instituto Agronômico	-0,67	4
72	65	Pampulha	-0,68	4
73	70	UFMG	-0,71	4
74	13	Prudente de Morais	-0,72	4
75	14	Santo Antônio	-0,73	4
76	30	Santa Inês	-0,82	4
77	15	Anchieta/Sion	-0,87	4
78	12	Savassi	-0,92	4
79	10	Centro	-1,05	4
80	9	Barro Preto	-1,10	4

26	Jardim Europa	0.443	IV
21	Primeiro de Maio	0.451	IV
37	Piratininga	0.455	IV
35	Santa Maria	0.455	IV
54	Betânia	0.456	IV
56	Abílio Machado	0.463	III
57	Ouro Preto	0.464	III
73	UFMG	0.464	III
55	Cardoso	0.470	III
22	Cachoeirinha	0.471	III
43	Pompéia	0.472	III
29	Antônio Carlos	0.477	III
71	Instituto Agronômico	0.477	III
19	Concórdia	0.479	III
32	Santa Efigênia	0.483	III
61	Barreiro De Baixo	0.487	III
49	Jardim América	0.488	III
63	Caiçara	0.491	II
60	Planalto	0.492	II
50	Jaraguá	0.493	II
62	Castelo	0.496	II
25	São Francisco	0.497	II
77	Anchieta/Sion	0.499	II
58	PUC	0.502	II
65	São Bento/ Santa	0.503	II
	Venda Nova/Centro**	**0.510**	**II**
46	**Estoril/Buritis***	**0.515**	**II**
31	Cristiano Machado	0.516	II
66	Santa Amélia	0.520	II
41	Serra	0.523	II
75	Santo Antônio	0.533	II
70	Barroca	0.535	II
69	Padre Eustáquio	0.536	II
74	Prudente de Morais	0.540	II
53	Belvedere	0.549	II
72	Pampulha	0.550	II
68	Floresta/Santa Tereza	0.570	I
59	Mangabeiras	0.570	I
78	Savassi	0.602	I
80	Barro Preto	0.608	I
67	Francisco Sales	0.609	I
79	Centro	0.645	I

15	São Paulo/Goiânia	0,512	III	NORDESTE
48	Sarandi	0,515	III	PAMPULHA
55	Cardoso	0,515	III	BARREIRO
29	Antônio Carlos	0,520	II	NOROESTE
26	Jardim Europa	0,521	II	VENDA NOVA
25	São Francisco	0,524	II	PAMPULHA
35	Santa Maria	0,524	II	NOROESTE
44	Venda Nova	0,527	II	VENDA NOVA
56	Abílio Machado	0,530	II	NOROESTE
33	Boa Vista	0,537	II	LESTE
61	Barreiro de Baixo	0,543	II	BARREIRO
19	Concórdia	0,549	II	NORDESTE
54	Betânia	0,550	II	OESTE
43	Pompéia	0,553	II	LESTE
60	Planalto	0,567	II	NORTE
58	PUC	0,569	I	NOROESTE
69	Padre Eustáquio	0,576	I	NOROESTE
32	Santa Efigênia	0,585	I	LESTE
62	Castelo	0,587	I	PAMPULHA
63	Caiçara	0,591	I	NOROESTE
49	Jardim América	0,592	I	OESTE
57	Ouro Preto	0,611	I	PAMPULHA
50	Jaraguá	0,626	I	PAMPULHA
66	Santa Amélia	0,630	I	PAMPULHA
71	Instituto Agronômico	0,634	I	LESTE
76	Santa Inês	0,635	I	LESTE
79	Centro	0,637	I	CENTRO-SUL
68	Floresta/Santa Tereza	0,641	I	LESTE
31	Cristiano Machado	0,648	I	NORDESTE
80	Barro Preto	0,650	I	CENTRO-SUL
46	Estoril/Buritis	0,660	I	OESTE
70	Barroca	0,699	I	OESTE
53	Belvedere	0,703	I	CENTRO-SUL
59	Mangabeiras	0,710	I	CENTRO-SUL
65	São Bento/Sta. Lúcia	0,718	I	CENTRO-SUL
77	Anchieta/Sion	0,720	I	CENTRO-SUL
75	Santo Antônio	0,721	I	CENTRO-SUL
74	Prudente de Morais	0,723	I	CENTRO-SUL
41	Serra	0,726	I	CENTRO-SUL
78	Savassi	0,734	I	CENTRO-SUL
72	Pampulha	0,735	I	PAMPULHA
67	Francisco Sales	0,759	I	CENTRO-SUL

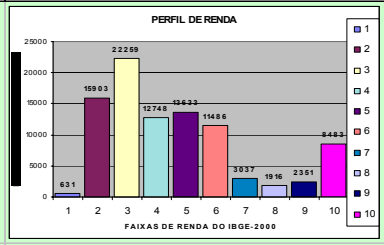
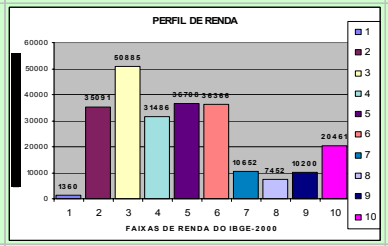
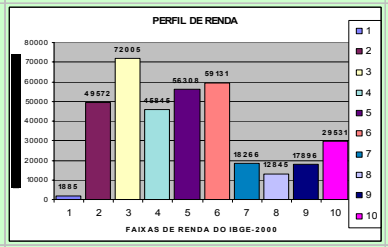
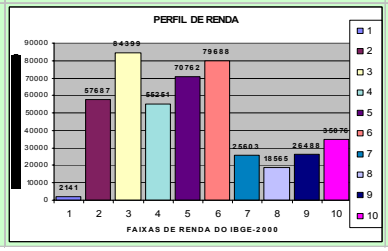
NUM_COMPA = nº para comparação

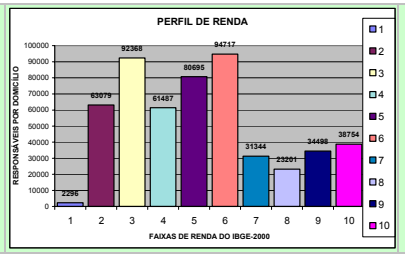
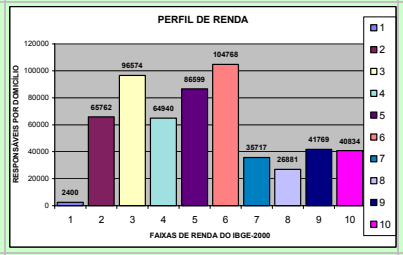
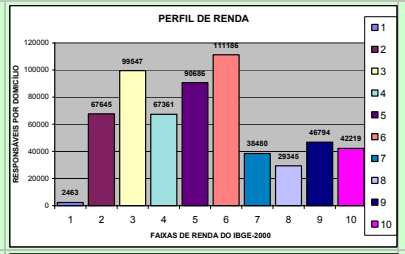
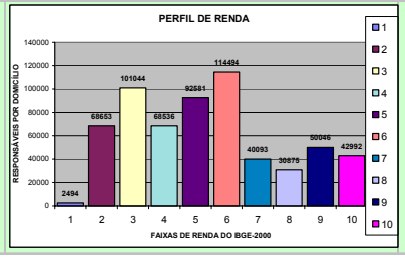
*Estoril/Buritis está junto com Pilar Oeste

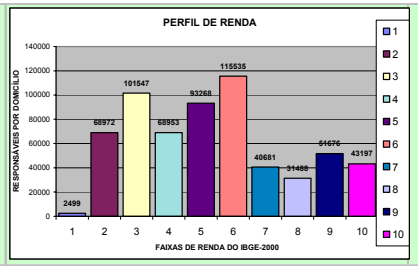
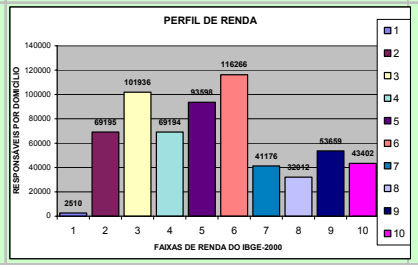
**Venda Nova Centro não existe mais

***Não consta nas outras tabelas

RESUMO DA TOTALIZAÇÃO DAS POPULAÇÕES PRÓXIMAS ÀS OBRAS DO OP E SUAS RESPECTIVAS FAIXAS DE RENDA SEGUNDO O CENSO IBGE-2000 (distância em metros)

DISTÂNCIA	POPULAÇÃO INCLUSA	FAIXAS DE RENDA DO IBGE-2000	RENDA005	RENDA051	RENDA12	RENDA23	RENDA35	RENDA510	RENDA1015	RENDA1520	RENDAM20	RENDA0
100	352743		631	15903	22259	12748	13633	11486	3037	1916	2351	8483
200	895092		1360	35091	50885	31486	36708	36366	10652	7452	10200	20461
300	1333700		1885	49572	72005	45845	56308	59131	18266	12845	17896	29531
400	1654575		2141	57687	84399	55251	70762	79688	25603	18565	26488	35076

500	1882389		2296	63079	92368	61487	80695	94717	31344	23201	34498	38754
600	2028705		2400	65762	96574	64940	86599	104768	35717	26881	41769	40834
700	2125266		2463	67645	99547	67361	90686	111186	38480	29345	46794	42219
800	2178102		2494	68653	101044	68536	92581	114494	40093	30875	50046	42992

900	**2198017**		**2499**	**68972**	**101547**	**68953**	**93268**	**115535**	**40681**	**31488**	**51676**	**43197**
1000	**2214396**		**2510**	**69195**	**101936**	**69194**	**93598**	**116266**	**41176**	**32012**	**53659**	**43402**

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