TRANSPARENCY OF COVID-19 INFORMATION IN SANTA CATARINA MUNICIPALITIES AND ITS RELATIONSHIP WITH SOCIOECONOMIC, POLITICAL AND EPIDEMIOLOGICAL VARIABLES

A TRANSPARÊNCIA DAS INFORMAÇÕES SOBRE A COVID-19 NOS MUNICÍPIOS CATARINENSES E SUA RELAÇÃO COM VARIÁVEIS SOCIOECONÔMICAS, POLÍTICAS E EPIDEMIOLÓGICAS

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Abstract

This study aimed to verify the relationship between socioeconomic, political, and epidemiological variables and the Information Transparency Index - COVID (ITI-COVID) in the municipalities of the state of Santa Catarina (SC). To do so, a quantitative study was carried out alongside a probabilistic sample of 170 municipalities. The results, obtained from the application of Spearman's correlation between the ITI-COVID and the ten variables of the three areas surveyed, indicated significant and predominant associations between the Index and the socioeconomic variables. Besides, the ITI-COVID's relations with the political variable of electoral participation and the epidemiological variable number of new cases of COVID-19 were significant. In conclusion, it was noticed a prevalence of more developed public administrations in providing greater detail of their actions and investments related to COVID-19, enabling effective means for the exercise of social control. Moreover, it was also seen that there is a greater interest of the population in searching for information and accountability by public managers as the number of cases of the disease in the respective municipality increases.

Keywords: coronavirus, transparency, correlation.

Resumo

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Este estudo objetivou verificar a relação das variáveis socioeconômicas, políticas e epidemiológicas e o Índice de Transparência das Informações – Covid (ITI-Covid) dos municípios do estado de Santa Catarina (SC). Para tanto, procedeu-se a um estudo quantitativo junto a uma amostra probabilística de 170 municípios. Os resultados, obtidos a partir da aplicação da correlação de Spearman entre o ITI-Covid e as dez variáveis das três áreas pesquisadas, indicaram associações significativas e predominantes do Índice com as variáveis socioeconômicas. Além disso, foram significativas as relações do ITI-Covid com a variável política de participação eleitoral e a variável epidemiológica número de novos casos da Covid-19. Conclusivamente, percebeu-se uma prevalência de as gestões públicas mais desenvolvidas propiciarem maior detalhamento das suas ações e investimentos quanto à Covid-19, possibilitando meios eficazes para o exercício do controle social. Além disso, também se pode verificar que há um maior interesse da população na busca de informações e na prestação de contas por parte dos gestores públicos conforme aumenta o número de casos da doença no respectivo município.

Palavras-chave: Coronavírus. Transparência. Correlação.

Introduction

COVID-19 was first identified in Wuhan, in the province of Hubei, China, wherein a few days thousands of cases and hundreds of deaths have arisen, as well as the detection of cases in several countries, affecting mainly adults over 60 and bearers of comorbidities (SÁFADI, 2020). Yang et al. (2020) add that the coronavirus has spread to domestic and foreign areas, resulting in a significant threat to the world. When the confirmed number of new cases outside China reached 2,459 and 2,700 infected patients had died, the World Health Organization (WHO) classified COVID-19 as a public health emergency of international concern (YANG et al., 2020).

In Brazil, the first case of COVID-19 was diagnosed on February 26th, 2020, coming from a patient from the city of São Paulo who returned from a trip to Italy. The virus spread rapidly across the country and, in less than five months, more than 2.4 million confirmed cases and 90 thousand deaths were already registered (FIOCRUZ, 2020). Werneck and Carvalho (2020, p. 1) highlight the huge challenges in Brazil, "because little is known about the transmission characteristics of COVID-19 in a context of great social inequality, with populations living in precarious housing and sanitation conditions, without systematic access to water, and in a situation of agglomeration".

In light of the effective difficulty in controlling the pandemic in the Brazilian territory, as well as in the other countries, research started to be carried out from different perspectives. Those in the field of medicine stand out, especially to characterize the genome of the new coronavirus, clinical aspects of infected patients, diagnosis, and medical treatment, among others. O'Brien et al. (2020), in a bibliometric study, identified 547 published studies in the health area on the subject. Analyzing the Scopus database, they highlight the substantial increase in scientific production on the subject in just three months, as well as a greater number of publications in *The Lancet, British Medical Journal,* and *Journal of Medical Virology.* Wuhan University is identified as the institution with the highest leadership concerning the number of publications.

In the field of public management, Marks-Sultan et al. (2016) emphasize the importance of the WHO for the training and the promotion of transparency. Transparency is understood as a way to show the tasks performed by public managers, providing access to data for full control of their actions by the population (CRUZ; SILVA; SANTOS, 2009). Kanaae, Fiel Filho, and Ferreira (2010) add that transparency shows to the citizen the concern of management in providing quality public services and accountability with honesty and ethics in the execution of public acts and expenditures.

In face of the few studies developed on the transparency of government actions during the COVID-19 period (CHEN et al., 2020; HOU et al., 2020), Fonseca et al. (2020) claim that transparency in pandemic times has been a challenge for public managers, especially for local governments. In this sense, to maintain transparency at adequate levels during the public health emergency period caused by COVID-19, Fonseca et al. (2020) prepare, through the Instituto de Pesquisa Econômica Aplicada [Institute of Applied Economic Research] (IPEA), a technical note to discuss justifications concerning the suspension of deadlines stipulated by Law No. 12.527/2011 - Law on Access to Information (LAI), determined by Provisional Measure (MP) n. 928/2020, "as well as pointing out

measures that the federal government could adopt so that government transparency is not significantly impaired in the context of the COVID-19 pandemic" (FONSECA et al., 2020, p. 7).

The Ministério Público Federal [Federal Public Ministry] - MPF (2020) understands that even the 1988 Constitution already establishes that transparency in public accounts is an inseparable concept of any democratic republic, and it is up to managers to provide information on how much they collect and spend. From this perspective, the MPF made one of the first national surveys on municipal public transparency, preparing the National Transparency Ranking (RNT).

Regarding the information related to the COVID-19 pandemic, the Transparência Internacional – Brasil [International Transparency – Brazil] (2020) created a ranking (Information Transparency Index - COVID, ITI-COVID) and evaluated Brazilian states and capitals regarding the transparency of emergency signings performed in response to COVID-19, best practices and initiatives of transparency and data opening related to emergency signings. This methodology has been adopted in the evaluation of Brazilian municipalities, as done by Rede de Controle Municipal da Gestão Pública de Santa Catarina [Municipal Control Network of Public Management of Santa Catarina] (2020a), which evaluated all Santa Catarina municipalities through the COVID-19 State Transparency Ranking.

Thus, Santa Catarina (SC), by expanding the metric to all its municipalities, becomes the forerunner in the assessment of the transparency levels of public signings during the pandemic period of COVID-19, through the ITI-COVID. The assessment through the ITI-COVID allows verifying whether the Santa Catarina municipalities adequately disclose the information provided for by Law No. 13.979/2020, which establishes the COVID-19 coping measures, as well as the Access to Information Law - LAI and Law of Fiscal Responsibility - LRF (REDE DE CONTROLE MUNICIPAL DA GESTÃO PÚBLICA DE SANTA CATARINA, 2020a).

The first assessment of the ITI-COVID in Santa Catarina was carried out between 05/22/2020 and 06/26/2020 and aimed to "evaluate and promote the transparency of the websites of Santa Catarina's municipalities related to public procurement in the context of combating COVID -19, fostering social control" (REDE DE CONTROLE MUNICIPAL DA GESTÃO PÚBLICA DE SANTA CATARINA, 2020a). In this way, the index verifies whether the municipalities comply with the disclosure of information related to bids, contracts, commitments, and payments made within the terms of Law No. 13.979/2020, which provides for actions and expenses to combat the pandemic.

From the disclosure of the ITI-COVID and the publication in the literature of studies that investigated the relationship between public transparency and variables of socioeconomic (CRUZ, 2010; SOL, 2013; AVELINO et al., 2014; BROCCO et al., 2018; FENNER et al., 2019; FENNER, 2020), political (FENNER et al., 2019; FENNER, 2020) and epidemiological (FARIAS, 2020; YANG et al., 2020) nature, arises the interest of this research, which also proposes to analyze possible relations of these variables with the ITI-COVID of the municipalities of Santa Catarina.

Therefore, seeking to contribute to the issue of discussing public transparency in face of the COVID-19 pandemic, the present study has as the guiding problem: what is the relationship between socioeconomic, political, and epidemiological variables and the ITI-COVID of the municipal governments of Santa Catarina? To do so, the study aimed to verify the relationship between socioeconomic, political, and epidemiological variables and the ITI-COVID of the municipalities in the state of SC.

Following other investigations, the socioeconomic variables studied were the Firjan Municipal Development Index (IFDM), Firjan Municipal Health Development Index (IFDM-S), the Firjan Fiscal Management Index - (IFGF), the tax distribution, the population size, and unemployment. The choice of the IFDM, IFDM-S, and IFGF variables is mainly because they serve to monitor the development of the municipalities and their capacity to manage resources. The tax distribution variable is part of the evaluation due to its relevance in showing the budgetary capacity of the municipalities to execute their policies defined from the demands of society. Moreover, the assessment of transparency from the Population and Unemployment variables gains importance to highlight its behavior in municipalities with different population indexes, as well as to identify whether the unemployed population may be putting pressure on managers to increase transparency.

As for the political variables, it was decided to assess the citizen's electoral participation, believing that this variable tends to indicate that in municipalities where the population is more active in voting, managers tend to be more concerned with transparency actions. In addition to this, the score attributed to the municipality in the RNT will also be assessed. It is assumed that the

municipalities with the best scores on the RNT tend to also maintain a policy of transparency in the actions evaluated by the ITI-COVID.

Finally, in light of the current pandemic scenario, it is also key to assess the relationship between epidemiological variables and public transparency, especially with the ITI-COVID. In this sense, the number of new cases, new deaths and the percentage of social isolation of the population may, in some way, influence transparency, as it is assumed that managers tend to increase the transparency of spending on COVID-19 from the evolution of these variables.

Among the several studies previously carried out that investigated relationships between municipal public transparency with indicators, most are limited to the use of socioeconomic variables (BROCCO et al., 2018), few have analyzed political variables (FENNER, 2020), and studies evaluating epidemiological variables in local governments are unknown.

Thus, this study is justified given its capacity to fill gaps in theory, and its results can also contribute to the assessment of public management in municipalities, especially concerning increasing the transparency of their acts. The specificity of the subject allows the understanding of the transparency of the actions presented by the municipal governments in facing the pandemic of COVID-19.

The ITI-COVID and possible related variables

From previous investigations aimed at municipal public transparency, it is believed that socioeconomic variables can be influential for the ITI-COVID in municipalities. Among these variables, the development and public management assessment indexes are assumed to be included. Fenner et al. (2019) highlight that public transparency indicators tend to have a direct relationship with municipal development indicators, because they assist the population in monitoring the use of resources, inhibit corruption, and encourage social control.

Among the development indexes, stands out the IFDM "created in 2008, given the need to monitor Brazilian socioeconomic development annually, considering the different realities of the smallest federative division: the municipality" (FIRJAN, 2018, p. 1). Cruz (2010) assumes that the municipalities with the best socioeconomic indicators, such as the IFDM, would tend to present better indexes of transparency on their websites. Brocco et al. (2018) also indicated a positive relationship between IFDM and municipal public transparency, leading to the assumption that there may be a relationship with the ITI-COVID.

Specifically for the health area, FIRJAN prepares the IFDM-S, which "[...] focus on basic health and includes indicators whose control is within the municipal competence: the proportion of adequate prenatal care, deaths from badly defined causes, infant deaths due to preventable causes and hospitalizations sensitive to primary care" (FIRJAN, 2018, p. 13). Avelino et al. (2014) point out that socioeconomic indicators such as the IFDM have a greater influence on the level of voluntary transparency than other explanatory variables. The IFDM-S integrates one of the three variables (education, health, and employment and income) that make up the consolidated IFDM.

Another indicator that assesses the management of resources is the IFGF, which seeks to contribute to the debate on the efficiency of fiscal management, focusing on the administration of public resources by city halls specifically on their financial autonomy, investment capacity, liquidity, and personnel expenses (FIRJAN, 2019). Leite Filho et al. (2018) concluded that the quality in fiscal management (IFGF) is related to the transparency of Brazilian municipalities, suggesting a possible relationship also with the ITI-COVID.

Economic variables must be taken into account for the evaluation of municipal public management, especially in the state of Santa Catarina, which has more than 90% of its municipalities classified as small. Tax distribution, or better known as intergovernmental transfers made by the federal and state governments, becomes an important thermometer for the assessment.

Moratta (2015, p. 140) highlights in a study carried out in the municipalities of Santa Catarina that "due to the lack or insufficiency of own resources, there is the assumption that the municipalities depend on intergovernmental transfers to provide goods and services to the local community and, consequently, economic growth". Azevedo and Cabello (2020) conclude that there is low adequacy of transparency in the information websites of the largest municipalities concerning spending and intergovernmental transfers. From this, and the growing need for federal and state resources for many areas, especially health, it was built the assumption that there may be a relationship between tax distribution and ITI-COVID.

The literature also indicates that variables such as population size and unemployment levels can influence the assessment of public transparency and, it is assumed, of ITI-COVID. Municipalities with a larger population tend to have more resources, technical and managerial capacity, and trained people, which helps with the adoption of better transparency practices (NORRIS; MOON, 2005). On the other hand, studies like Sol (2013) and Fenner (2020) highlight that municipal transparency tends to be lower in municipalities with high unemployment rates.

The relationship between the ITI-COVID and some political variables will also be measured in this investigation. Electoral participation, defined as a group of people with the right to vote and who attended the polls of their municipalities during the elections (FENNER, 2020), is one of them. Fenner (2020) assumes that the greater interest of the population in public management, demonstrated by their electoral participation, would make the government feel pressured to disseminate information, increasing the transparency of the municipalities.

Another metric classified in the group of political variables is the methodology used by MPF (2020) to measure the level of transparency of the country, states, and municipalities called RNT. The RNT is obtained from the verification of compliance with legislation aimed at public transparency, with emphasis on Complementary Law No. 101/2000, Complementary Law No. 131/2009, and Law No. 12.527/2011. This ranking was built by the MPF in two editions that cover the data collection periods from 09/08/2015 to 10/09/2015 and 04/11/2016 to 05/27/2016. It is believed that scores attributed to the transparency of the municipalities through the RNT and the ITI-COVID are positively related, indicating that the municipal management has solid conduct and is permanently concerned with the disclosure of its acts.

Finally, the epidemiological variables considered are those used by the government in monitoring and controlling the pandemic. It is understood that new cases and deaths of COVID-19, often linked to the lack of social isolation, demand spending of emergency public expenditures, which are assessed by the ITI-COVID for transparency.

Thus, to control the advance of the pandemic, several measures have been adopted, including social isolation, defined by Farias (2020, p. 2) as "when people cannot leave their homes to prevent the spread of the virus". The author reinforces that this procedure is not to be mistaken with quarantine, where the individual with suspected infection is quarantined for fourteen days, which is the incubation period, time for the virus to manifest itself in the body, nor with social distance, which seeks to avoid agglomerations by maintaining a minimum distance of one meter between people (FARIAS, 2020).

Raupp and Pinho (2020, p. 3736) complement that "in moments of social isolation resulting from pandemics, citizens look for information on the internet so they can learn about the real situation". From this, it is understood that the percentage of social isolation can be positively related to the ITI-COVID.

The transparency of information on public health in the Brazilian context leaves significant gaps. Fraga and Lira (2018) point out that there are few and isolated initiatives for transparency in access to health care. This fact, incorporated into the current context of the COVID-19 pandemic, allows the emergence of the perception that as the transparency in the health area increases, its indicators tend to improve. Hence, it is understood that with the increase in the number of cases and deaths of COVID-19 there will be a positive impact on the ITI-COVID. Thus, it is assumed that new cases, new deaths, and the percentage of social isolation are positively related to the ITI-COVID, indicating that as these indicators evolve, managers increase their concern with the transparency of spending on the pandemic

Methodology

To fulfill the aim of this work, of verifying the relationship between socioeconomic, political, and epidemiological variables and the ITI-COVID of the municipalities in the state of SC, quantitative and correlational research was adopted (SAMPIERI; COLLADO; LUCIO, 2013). The study population comprises two hundred and ninety-five (295) municipalities in the state of Santa Catarina, submitted to the simple random probability sampling procedure, with an error of 5% and a 95% confidence interval. The one hundred and seventy (170) municipalities drawn are illustrated in Figure 1.

Figure 1: Geographic distribution of the drawn municipalities of Santa Catarina to compose the study sample
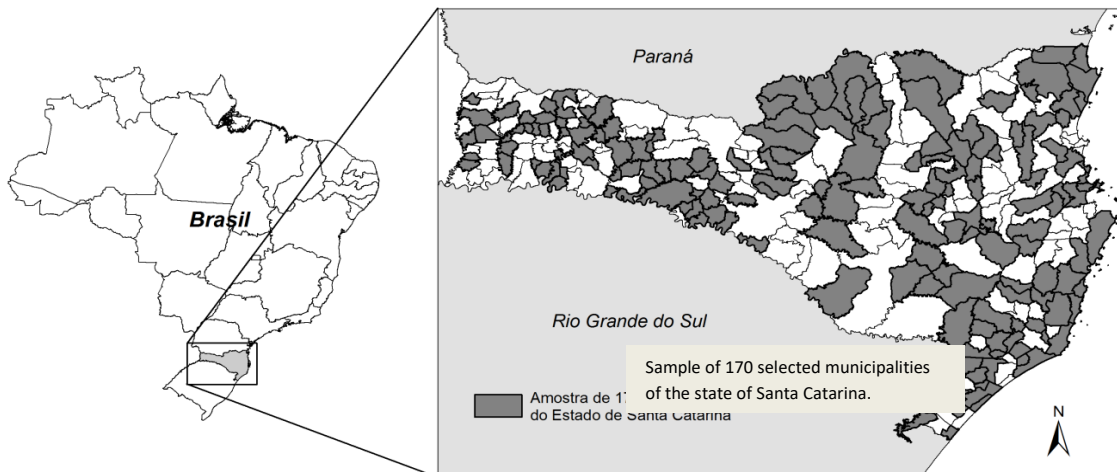
The collected data are of secondary origin, detailed in Chart 1. Regarding the variable ITI-COVID, the central element of the relations measured in this investigation, it was obtained through the website of the Rede de Controle da Gestão Pública de Santa Catarina [Control Network of Public Management of Santa Catarina] (2020b). This index obeys a scale of 0 to 6, being: from 0.00 to 1.99 (Not Fulfilled); 2.00 to 3.99 (Partial Fulfillment); 4.00 to 5.99 (Regular Fulfillment); 6.00 (Full Website). The index is formed by 46 variables classified in 4 dimensions (bidding procedures for exemption and unenforceability; contracts; commitment; payment) within the terms of Law No. 13.979 / 2020 and requirements of the LRF and the LAI. The Rede de Controle da Gestão Pública de Santa Catarina [Control Network of Public Management of Santa Catarina] collected the data and prepared the first version of the ITI-COVID in the period of 05/22/2020 and 06/26/2020. The ITI-COVID used in this study was collected by the researchers on 08/14/2020.

Chart 1: Description of the investigated variables and secondary databases used for the collection

Variable (data)	Description	Database	Year	Measurement Scale
Information Transparency Index COVID (ITI-COVID)	Total transparency score obtained in the COVID-19 State Transparency Ranking	Rede de Controle da Gestão Pública de Santa Catarina	2020	Ranking of score from 0 a 6. Where: 0 is the lowest and 6 the highest.
IFDM	Firjan Municipal Development Index.	Federação das Indústrias do Estado do Rio de Janeiro (FIRJAN)	2016	Ranking from 1 to 170. Where: 1 is the highest and 170 the lowest.
IFDM-S	Firjan Municipal Health Development Index.	Federação das Indústrias do Estado do Rio de Janeiro (FIRJAN)	2016	Ranking from 1 to 170. Where: 1 is the highest and 170 the lowest.
IFGF	Firjan Fiscal Management Index.	Federação das Indústrias do Estado do Rio de Janeiro (FIRJAN)	2018	Ranking from 1 to 170. Where: 1 is the highest and 170 the lowest.
Tax Distribution	Distribution of federal and state taxes to municipalities	SICONFI - Sistema de Informações Contábeis e Fiscais do Setor Público Brasileiro	2019	R$ received in the year from the state and the federal union.
Population	Estimated number of inhabitants of the municipality.	Instituto Brasileiro de Geografia e Estatística (IBGE)	2019	Number of inhabitants
Unemployment	Percentage of the economically active population without formal employment.	Instituto Brasileiro de Geografia e Estatística (IBGE)	2018	% inhabitants without formal employment
Electoral participation	Percentage of voters in the municipality who participated in the last election.	Tribunal Superior Eleitoral (TSE) e Instituto Brasileiro de Geografia e Estatística (IBGE)	2016	% voting electors.
National Transparency Ranking (RNT).	Average transparency score obtained in the National Transparency Ranking (RNT) considering the 2015 and 2016 editions.	Ministério Público Federal (MPF)	2015 e 2016	Ranking of score from 0 a 10. Where: 0 is the lowest and 10 the highest.
New Cases	Daily average of New COVID-19 Cases	Fundação Oswaldo Cruz (FIOCRUZ)	2020	Number of cases per day from 05/22 to 06/26/2020
New Deaths	Daily average of New COVID-19 Deaths.	Fundação Oswaldo Cruz (FIOCRUZ)	2020	Number of deaths per day from 05/22 to 06/26/2020
Social Isolation	Daily average of social isolation of inhabitants	INLOCO- Mapa Brasileiro da COVID-19	2020	% isolated inhabitants per day from 05/22 to 06/26/2020

Source: Authors' elaboration (2020).

Regarding the RNT, it was decided to carry out an average of the two evaluations already performed by the MPF (2016) in each of the analyzed city halls of the state of SC. The advantage of this index, to the detriment of others that measure municipal public transparency, is its national coverage, punctuating the transparency of the 5,570 municipalities in Brazil. As for the other indexes analyzed, it was decided to select the data from the last collection available on the respective government website, to seek higher updating. The three epidemiological variables tested (new cases, new deaths, and social isolation) were collected respecting the average values for the period from 05/22/2020 to 06/26/2020, in order to standardize the variable ITI-COVID.

After being collected, the data were submitted to statistical analysis, with the aid of the software Statistical Package for the Social Sciences version 21.0 (SPSS Statistics V21). Such analyses included the descriptive statistics of the variables under study, considering minimum and maximum values, median, average, and standard deviation; besides the performance of the Kolmogorov-Smirnov and Shapiro-Wilk tests for verifying the normality of the data and applying an equivalent correlation technique. From the results of the normality tests, realizing that the distribution of the data under analysis is not normal (VIEIRA, 2010), it was decided to apply the Spearman Correlation, used to measure the degree of correlation between two ordinal or numerical variables, to achieve the aim of the study. To measure the strength of the relationships between the variables, the correlation coefficient was used, which according to Field (2009, p. 129), "is a measure of the size of an effect", with values of ± 0.1 representing a small effect, values of ± 0.3 representing a medium effect and values of ± 0.5 indicating a large effect.

Descriptive analysis of the results

In the state of SC, small municipalities prevail, classified as those with up to 50 thousand inhabitants, based on the population strata defined by the Instituto Brasileiro de Geografia e Estatística [Brazilian Institute of Geography and Statistics] (IBGE, 2010). It is noted that 90.59% of the municipalities surveyed in Santa Catarina fall into this category, and in general, the state has a percentage of 92.54% municipalities in this classification range. The number of large cities is not very significant, represented only by Joinville and Florianópolis. Among the small municipalities, Santiago do Sul, with 1,260 inhabitants, is the smallest in the research sample.

As for socioeconomic variables, when it comes to the scores in the development and management rankings, the municipality of Concórdia ranks first in the IFDM and third in the IFDM-S. On the other hand, the municipality of Petrolândia has the worst position in the IFDM (position 170) and one of the last positions in the IFDM-S (position 166). In the IFGF ranking, the municipality of Turvo has the best performance and Lindóia do Sul the last position.

As for the transparency presented by the ITI-COVID, only 14 municipalities in the sample obtained a score of 6.0, indicating that the website of the municipal government was complete regarding information about the COVID-19 pandemic. On the other hand, 102 selected municipalities scored from 0.00 to 1.99 (Not Fulfilled) in the dimensions and variables related to the transparency of information related to bids, contracts, commitments, and payments made within the terms of Law No. 13.979 to actions and expenses of facing the pandemic. Finally, 54 municipalities scored from 2.00 to 3.99 (Partial Fulfillment) and none of the drawn municipalities scored between 4.00 to 5.99 (Regular Fulfillment). The average score of the municipalities surveyed in Santa Catarina is very low, at 1.86 points, with a minimum of 0 and a maximum of 6 points.

Table 1 presents the descriptive statistics of the analyzed quantitative variables. The average annual Tax Distribution of the surveyed municipalities was R$ 59,516,099.56. The municipality that received the lowest volume of resources through the state and federal governments was Anchieta with R $ 10,034,024.04 and the municipality with the highest volume received was Joinville with R $ 1,125,794,318.19, which also has the largest number of inhabitants of the state. Regarding the population, there is an average of 25,741 inhabitants per municipality.

The average percentage of unemployment of the municipalities is quite high (73.44%), with wide variations between the lowest level in Florianópolis (36.10%) and the highest level in São Miguel da Boa Vista (91.50%). However, it is necessary to emphasize that municipalities in the hinterland of the state, where agricultural activities prevail, have a worsening trend in this variable, since the IBGE considers for the survey only the number of formal jobs, leaving out autonomous and agricultural activities without labor formalization.

Table 1: Descriptive statistics of the quantitative variables investigated in the study

Variables	Minimum	Maximum	Median	Average	Standard-deviation
ITI-COVID (score)	0,00	6,00	1,50	1,86	1,78
Tax Distribution (R$)	10034024,04	1125794318,19	24910327,29	59516099,56	133259399,00
Population (inhabitants)	1260,00	590466,00	7741,00	25741,36	69916,86
Unemployment (%)	36,10	91,50	74,65	73,44	11,09
Electoral Participation (%)	40,39	96,40	86,14	83,71	9,47
RNT (score)	3,40	9,75	7,70	7,56	1,20
New Cases (nº)	0,00	35,83	0,25	1,70	5,36
New Deaths (nº)	0,00	0,81	0,00	0,02	0,08
Social Isolation (%)	30,00	58,00	40,00	41,26	4,54

Source: Elaboration based on secondary data (2020).

For the political variable of electoral participation, with an average of 86.14%, the smallest participation (40.39%) is observed in the municipality of Sangão and the largest (96.40) in Presidente Castelo Branco. On average, the electoral participation of the municipalities in the sample is 83.71%. Concerning the RNT, attention is drawn to the very positive average of the scores of the 170 municipalities surveyed (7.56). With the lowest average score of the two evaluations (2015, 2016)

made by the RNT, appears the municipality of Criciúma, which obtained 3.40. On the other hand, Xanxerê obtained the best grade (9.75) of the two evaluations.

Regarding the epidemiological variables, the number of new daily cases per municipality varied between 0.00 and 35.83 in the analyzed period. New deaths ranged from 0.00 to 0.81 daily records per municipality. Finally, the percentage of social isolation stands out, averaging 41.26% during the survey period. This index is considered very low, as defined by the Centro de Contingência do Coronavírus da Secretaria de Estado da Saúde – SP [Coronavirus Contingency Center of the State Secretary of Health – SP], which recommends the adherence of 70% of the population so that the spread of COVID-19 is controlled (AMORIM et al., 2020). In this sense, the municipalities of Ermo stand out with the lowest average of social isolation in the period (29.78%) and Brunópolis with the highest average (57.67%).

Analysis of the relationships between the ITI-COVID and socioeconomic, political, and epidemiological variables

In this section are presented the analyses of the relationships between socioeconomic, political, and epidemiological variables and the ITI-COVID of the municipalities of the state of SC, to achieve the main objective of this study. Regarding socioeconomic variables, Table 2 shows the results for Spearman's correlation test.

Table 2: Correlation test results between the ITI-COVID variable and the socioeconomic variables

Spearman Correlation	IFDM	IFDM-S	IFGF	Tax Distribution	Population	Unemployment
Correlation coefficient	-0,325**	-0,201**	0,002	0,338**	0,301**	-0,252**
Sig. (2 extremities)	0,000	0,009	0,976	0,000	0,000	0,001
N	170	170	170	170	170	170

**. The correlation is significant at the level 0,01 (2 extremities).
Source: Authors' elaboration (2020).

The results presented in Table 2 are very promising in terms of the relationships between the ITI-COVID and socioeconomic variables, following a trend already observed in the literature when public transparency is analyzed (CRUZ, 2010; SOL, 2013; AVELINO et al., 2014; FENNER et al., 2019; FENNER, 2020). The six variables tested have a significant relationship (sig. ≤ 0.05) with the ITI-COVID, except for the IFGF, a result contrary to that verified by Leite Filho et al. (2018) when analyzing the relationship between the quality of fiscal management and the transparency of Brazilian municipalities. What can be supposed is that, since ITI-COVID is a new index for public managers, its effectiveness cannot yet be felt on municipal fiscal management and rectitude, requiring a longer-term follow-up to analyze the effectiveness of this relationship.

As for IFDM and IFDM-S, the correlations obtained were significant (sig. ≤ 0.05), negative - due to the ranking of municipalities, as highlighted in the methodology – and of medium and small effect, respectively. The relationships between these development indexes, covering the areas of employment and income, education, and health, and the ITI-COVID can be explained by the greater availability of resources to invest in the dissemination of information, a higher level of education of the population, better structures of educational and health management (BROCCO et al., 2018) of the best-ranked municipalities. It is noticed that there is a prevalence of more developed public administrations to provide greater detail of their actions and investments concerning COVID-19, enabling effective means for the exercise of social control.

Regarding the tax distribution, the correlation is significant (sig. ≤ 0.05), positive, and of medium effect, indicating that municipalities with greater distribution tend to be more transparent when it comes to the ITI-COVID. This result indicates that as municipalities receive greater volumes of resources, from the state government and the Union, they tend to be more concerned with the transparency of the allocation of these resources. Moreover, the municipalities with the greatest tax distribution also tend to be the largest in the public spending structure and are therefore expected to be more transparent.

Finally, the variables population size and unemployment level also presented a significant correlation (sig. ≤ 0.05) and medium and small effect, respectively, with the ITI-COVID,

corroborating previous findings (FENNER et al., 2019; FENNER, 2020) for the public transparency metric. Municipalities with a larger number of inhabitants also tend to have a larger contingent of public servants, which could facilitate and propel the process of disseminating information about the management of pandemic resources. Besides, a larger population contingent can also put more pressure on information, via social networks, for example, which could contribute to explaining this result.

The relationship observed with the unemployment rate is negative, indicating that municipalities with higher unemployment rates tend to be less transparent about the application of public resources in the pandemic. Fenner et al. (2019) point out that unemployment characterizes periods of economic crisis, and at these moments there may be a greater cut in management expenses, including those related to the transparency of information, which demand structure and trained personnel for efficient publicizing.

Table 3 shows the results regarding the correlation between the ITI-COVID and political variables, indicating only a significant relationship for the variable electoral participation. The non-relationship between the RNT and ITI-COVID indexes can be explained by the fact that not necessarily the municipalities with websites that comply with the transparency laws are so engaged in publicizing the actions of the pandemic.

Table 3: Results of the Correlation tests between the ITI-COVID variable and the political variables

Spearman Correlation	Electoral participation	RNT
Correlation coefficient	-0,236**	0,149
Sig. (2 extremities)	0,002	0,052
N	170	170

**. The correlation is significant at the level 0,01 (2 extremities).
Source: Authors' elaboration (2020).

The significant (sig. ≤ 0.05), negative, and small correlation between the variable Electoral Participation and the ITI-COVID corroborates the findings by Fenner et al. (2019) when analyzing public transparency. A possible explanation for this fact is given by Fung (2013), who points out that the fewer voters participate in the electoral process, voting, the more impacted are the public managers regarding the obligation to disclose information in a transparent way to citizens, to resume their confidence.

Table 4 presents the results of the correlation tests between the ITI-COVID and the epidemiological variables, indicating only a significant relationship for the variable number of new cases of the disease.

Table 4: Results of the Correlation tests between the ITI-COVID variable and the epidemiological variables

Spearman Correlation	New cases	New deaths	Social isolation
Correlation coefficient	0,158*	0,138	-0,019
Sig. (2 extremities)	0,040	0,073	0,801
N	170	170	170

*. The correlation is significant at the level 0,05 (2 extremities).
Source: Authors' elaboration (2020).

The significant (sig. ≤ 0.05), positive, and small correlation between the variable New Cases and the ITI-COVID highlights that, as the records of new cases of COVID-19 increase, society starts to expand its concern with the pandemic, requiring that managers increase the transparency of information about actions and investments to combat the disease.

On the other hand, there is no significant correlation between the variable New Deaths and ITI-COVID. This distancing of the results of the analysis of the two epidemiological variables can be explained from the perspective that society exerts greater pressure on the transparency of information on expenditures with COVID-19 when new cases increase and the consequent demand for health structure than in the increase in deaths. Likewise, the variable Social Isolation did not show correlation with ITI-COVID, indicating that even if society seeks to keep itself informed about COVID-19 during the period of social isolation, it does not exert pressure on the municipal public managers to increase the transparency.

Final remarks

In recent years have emerged in the country a large number of publications on the subject of public transparency - some of them highlighted in this investigation -, which assess the relationship of transparency with different indicators. Adding to this fact, there is the current scenario of the COVID-19 pandemic, both encouraging the development of this study, which aimed to verify the relationship of socioeconomic, political, and epidemiological variables and the ITI-COVID of municipalities in the state of SC. The investigation of the state of SC is justified because it is a pioneer in the implementation of the ITI-COVID metric in Brazil.

The probabilistic sample of municipalities investigated is constituted, predominantly, by those of small size (90.59%), representing the population of the 295 municipalities in the state. In general, the municipalities of Santa Catarina have an average ITI-COVID of 1.86 points, indicating a very negative scenario of non-compliance with the disclosure of COVID-19 information, classified in the dimensions of bidding procedures for exemption and unenforceability, contracts, commitment, and payment. Considering the pioneering spirit of the state of SC in the dissemination of the index, it is expected that there will be a trend over the next months of improving the dissemination of this information, given the citizens' right to control actions and expenses of public management. Furthermore, countless cases of fraud and corruption have emerged in the country concerning funds intended to contain the pandemic, which further justifies the transparency and punctuality of this information for citizens.

Regarding the relationships evaluated between the ITI-COVID and socioeconomic variables, a trend was observed following the results previously found in the literature for public transparency. Except for IFGF, the other variables tested have a significant relationship (sig. ≤ 0.05) with ITI-COVID. Although they are not correlations of very large effect, these results already suggest trends in the dissemination of information on the pandemic, such as a higher ITI-COVID for cities with better development rates, as given by the IFDM and IFDM-S, greater tax distribution and number of inhabitants, and lower unemployment rate. These findings can be linked to human and financial resources, which perhaps the municipalities with these characteristics have, and which enable a better and more punctual provision of services of information dissemination to citizens.

As for political and epidemiological variables, were observed only relationships between the ITI-COVID and electoral participation and the number of new cases of COVID-19. Interestingly, the relationship with electoral participation is inversely proportional, indicating that the greatest disclosure of ITI-COVID actions by public management occurs in the municipalities with fewer active voters at the polls. An explanation is the fact that the managers of these municipalities aim at the transparency of their actions to win the voters' confidence and vote at the polls. As for the number of new cases, this relationship can be explained by the population's concern with the situation established in their city, encouraging citizens to seek more information and accountability from public managers.

As a first survey, this study fulfills its role of informing and instigating new research on the topic. It still should be noted that the temporality of the data was a limiting factor of the investigation, considering that it was not possible to collect secondary data for all variables for the same year or period. Except for this fact, it is believed that expanding the data collection to the other states in the country, which may apply the ITI-COVID or another transparency metric linked to the pandemic, would be of great value to reinforce the findings presented here. Moreover, other variables can be added to the analysis of relationships, such as education and income indicators, neglected in this investigation. The efforts engaged in the search for more information on the transparency of public management regarding the use and application of resources destined to fight the COVID-19 pandemic enable advances in actions to combat corruption and foster social control, encouraging the continuity of researches like this one.

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