ALEXA FOR THE WIN
ELECTRONIC MEDIA USAGE AND IDEOLOGY IN BRAZIL

Maria Eduarda R. N. Lessa

ABSTRACT:

Using *Latinobarómetro*'s data, this study looks at the relationship between ideology and the usage of electronic media to search for political information in Brazil. It then adopts a comparative approach with four other countries in Latin America. There is an ongoing debate about whether these technologies, especially social media, would stimulate debates across ideological preferences or create *echo-chambers*, that is, networks of individuals with similar opinions. While in the United States mixed evidences were found, for Latin America few studies address this issue. This research investigated who were the individuals that would be more likely to use the internet for this mean and, therefore, incur in these implications. A positive association was found between ideology and information search through the internet in 2018, which means that the closer to the right, more likely to use the internet the voters were.

KEYWORDS: electronic media; political polarization; social networks.

1. INTRODUCTION

The idea of a rational citizenry, moved by facts and capable of adjusting its preferences according to new information acquired, as portrayed in *the folk theory of democracy* (Achen & Bartels, 2013), has been long gone. Political scientists started to team up with psychologists and neurologists to understand voters' behavior and the social phenomena they are inserted. The *decision-making* process, how voters search and process information, what is inherited and what is acquired when it comes to political behavior, how and which preferences change, are some of the debates explored in this field. The role of emotions in this process is brought to attention with the emergence of *hot cognition* theories (Lodge & Taber, 2012), pointing that individuals access previous information and, especially, affect, to assimilate new data encountered.

The "black box" of biases is also being slowly demystified. Redlawsk (2002), for example, utilized a *dynamic process tracing* to simulate political campaigns' flux and analyzed how voters gather information about candidates. He observed a *search bias*, that is, individuals spent more time searching for candidates for whom they had developed affect in an early stage and, furthermore, were uncapable of adjusting evaluations about these same candidates when faced with incongruent[1] information. The analysis of cognitive shortcuts[2] caught the attention of political scientists; they observed that voters follow simpler paths – not always rational[3] ones - to obtain information about candidates and their performances. Social groups - such as family, friends and work peers-, ideology, party leaders and even candidate appearance (Lau & Redlawsk, 2001) play an essential role in this process. In an ever-changing environment where the flow of information and stimulus received, potentialized by information and communication technologies (ICTs), surpasses our processing capabilities, these shortcuts work as an efficient[4] tool.

New technologies, especially ICTs, are also shaping the context where individuals look for and process information. According to Greenfield (2008), "today's technology is already producing a marked shift in the way we think and behave, particularly among the

[1] Information that is opposed to the affect the voter developed. If the affect for the candidate was positive, negative information would be an incongruent information.
[2] Lau and Redlawsk (2001) define heuristics as "problem-solving strategies (often employed automatically or unconsciously) which serve to 'keep the information processing demands of the task within bounds' (Abelson and Levi 1985, 255)".
[3] Rational in a utilitarian meaning.
[4] Not to be mistaken with *effective*. There is an ongoing debate about the effectiveness of these heuristics, but its efficiency, that is, the quickness it brings to information processing, is well-known.

young". Social networks, automated accounts, *fake news,* fact checkers and an extensive list of "non-familiar" terms were brought to attention along with the controversial 2016's presidential campaigns in the United States. In 2018, Brazil faced similar circumstances when the two main candidates in the presidential election[6] were accused of trying to persuade voters through digital strategies, such as misinformation campaigns on social media. Discussions about polarization emerged in a fast pace and scholars have been debating intensively about the implications that the use of electronic media could bring to polarization (Tucker et al., 2018). Furthermore, these technological advances made possible the creation of new tools to study the dynamics of voters' behavior and the differences between existent groups[7].

According to Jost (2017), liberal and conservatives in the United States differ in several behavioral aspects, from tolerance to uncertainty to room décor (Carney, Jost, Gosling, & Potter, 2008 *apud*. Jost, 2017). This study, therefore, will look at the main differences between those opposite sides of the ideological spectrum in Brazil and whether it affects the means used to search for political information. It aims to analyze if in 2018 - when Brazilians elected their new president - ideology influenced the probability of searching for information through the internet/electronic media[8]. Using data from 2018's *Latinobarómetro* on how people learn about political information, self-reported ideology, social media usage and sociodemographic factors (age, sex, education, social class, ethnicity and race), multivariate logistic regression models will be presented in order to better understand this relation. Finally, a comparative analysis will be developed among Latin American countries which also held presidential elections in 2018[9].

The paper is organized as follows: the next section (the second) presents previous researches regarding the relation between cognitive shortcuts, ideology and information search. The third section discusses new developments about the relation between the internet, social media and polarization. The fourth briefly analyses existing papers on the use of electronic media in Brazil's presidential elections and in significant political events within the country. The fifth introduces the data and methodology used. The sixth presents results found, the main one is that the closer to the extreme-right in the ideological scale,

[6] Fernando Haddad and Jair Bolsonaro.
[7] See Mellon (2013), Bond & Messing (2015).
[8] Question P19ST.G: *Cómo se informa Ud. de los asuntos políticos?* Answer: *Medios electrónicos/internet*.
[9] Colombia, Costa Rica, Mexico and Paraguay.

more likely the individual will be to search for political information through the internet and, finally, the seventh discusses the implications of these findings.

2. SHORTCUTS, IDEOLOGY AND INFORMATION SEARCH

Cognitive shortcuts, or heuristics, are tools that individuals use to process information. They look for cues to facilitate their decision-making process. When it comes to political information, these cues are taken from numerous sources. In Brazil, for example, Samuels and Zucco (2013; 2018) observed that party identification, in some cases, could offer leads that would help voters to "make sense of politics" and, consequently, shape their attitudes. Boas (2014) analyzed the relation between candidates' personal titles (specifically *pastor* and *doctor*) and vote intention and found a positive association for candidates carrying "doctor" titles; he argues that people tend to attribute a series of characteristics such as intelligence or trustworthiness along with the mentioned title.

Sometimes, ideology can also function as a cognitive shortcut, as according to Zechmeister (2006) "ideological labels can help citizens to make reasonable political evaluations and choices". Labels such as *left* and *right* are frequently associated to groups, parties or even candidates, with the latter being commonly observed in Latin America. Elites are also central actors when it comes to the connection of these labels to symbols – be it a group, a personality or even a specific policy. Zechmeister (2006) also found, through a study with undergraduate students, that these linkages depend on the context of the country analyzed and noticed that in Argentina political parties were not immediately associated with those ideological labels, while in Mexico those factors were closely tied.

Furthermore, besides differences in the national conjuncture, several studies showed that there are also significant differences between individuals who self-identified as *leftists*, *centrists* or *rightists*[10]. These differences affect how voters use these shortcuts, search and interpret information. Carney, Jost, Gosling and Potter (2008) argued that ideological commitments can, sometimes, guide or constrain attitudes and behaviors and that "ideology both reflects and reinforces individual differences in fundamental psychological needs, motives, and orientations toward the world".

[10] Or, oftentimes, liberals, conservatives and independents.

Some examples of these differences frequently encountered in the literature are attitudes towards groups like immigrants and themes like abortion or drug legalization. Furthermore, Iyengar & Hahn (2009) found that conservatives and liberals in the United States preferred different television channels, even when watching news about themes unrelated to politics. They also mentioned that Republicans were more likely to classify mainstream media as biased when compared to Democrats[11]. Pfau, Houston and Semmler (2007) also noticed differences in the means used to search for political information by those mentioned groups in US' 2004 presidential campaigns.

In Brazil, mainstream media vehicles aren't usually associated to specific ideological labels, while in the United States this relation is more straightforward, with cable television channels, such as CNN and Fox News, choosing a side that is easily perceived by the electorate, for example. This research will first investigate if - within this context where less clues to guide voters are available - *leftists* and *rightists* in Brazil diverge when it comes to the means used to look for political information[12]. It will, then, look at polarization[13] as a possible consequence of the selective exposure phenomenon that can be intensified with the use of electronic media.

3. INTERNET, SOCIAL MEDIA AND POLARIZATION

A report from 2018's *Latinobarómetro* points out that amongst the interviewed, 89% possessed a mobile phone. Also, 32% of those who claimed to have access to less than three meals a day had a smartphone; and this percentage goes up to 44% within the 18-25 age cohort (pg. 76). From the database used in this research[14] (data from Brazil, 2018), 44.3% of respondents claimed having used the internet (or electronic media) to search for political information, compared to 42.4% in 2017 and 35.1% in 2016. Those numbers show the relevance that these factors have – or at least should have – to the political debate.

[11] Also, according to the authors, "(...), there is growing evidence that in the new media environment, partisans attribute bias to mainstream news outlets and gravitate to alternative sources perceived as more congenial to their preferences".
[12] *Appendix A* shows bar plots for the patterns observed in the relation between means used to search for political information and self-placement within the ideology scale.
[13] Polarization here is understood as the distance between *leftists* and *rightists* in the ideology scale, better detailed in section 5. Also, the term may sometimes be used to refer to the distance of a specific group from the center of the scale.
[14] Presented in the "Data and Methodology" topic.

These findings also converge with a contemporary discussion: in a series of opinion polls[15], a decrease in citizens' political participation, as well as low satisfaction scores with democracy were observed. Brazil was no exception and had, in 2018, the highest percentage of vote abstention (20.3%) since 1998 (Paixão, 2018). Debates then arose about the "death" of these regimes, which depend - from a normative perspective - on citizen participation and would, therefore, be doomed to failure (Mounk & Foa, 2016). On the other hand, authors such as Norris (2017) state that, in fact, these results reflect new behaviors and the emergence of new channels of political participation. Social networks, online news providers and electronic media in general were central tools to events such as the Arab Spring in 2011 and "June Journeys[16]" in Brazil, 2013.

There is an ongoing discussion about the impact that the use of information and communication technologies exerts over polarization. *Selective exposure, confirmation bias*, *echo-chambers* and *homophily* were terms coined by the ones who believe that individuals tend to search for information that would reaffirm (or confirm) their previous thoughts about an issue and avoid dissonant ones. The operationalization of this selection became even easier with ICTs and it is argued that this process could lead to a sharp increase in polarization (Sustein, 2001; Pariser, 2011).

On the other side, Garrett, Carnahan and Lynch (2011), when studying this phenomenon within the United States, argued that this ease in selection would actually promote contact with more diverse sources; they affirm that "individuals who use explicitly partisan online sources will be more likely to use more politically diverse mainstream news outlets and, to a lesser extent, partisan outlets representing an opposing ideology, than those who do not[17]". The authors also mentioned an important and controversial discussion taking place in political behavior studies: the role of partisanship and ideology in "shaping exposure to political information" (*ibid*., 2011).

These technologies can, potentially and paradoxically, expose voters to opposing opinions and limit their contact with diverging information. The latter have been associated with "the adoption of more extreme attitudes over time and misperception of facts about current events" (Bakshy, Messing & Adamie, 2015). A research conducted

[15] Such as World Values Survey (WVS) and Freedom House.
[16] In Portuguese, *Jornadas de Junho*. Protests emerged when incumbent local governments decided to raise prices of public transportation services.
[17] They claim that "individuals who opt to use mainstream news sources are exposed to more diverse views than those who rely on their explicitly partisan alternatives".

using Facebook data showed that conservative Americans[18] were slightly more likely to access information from sources with dissimilar ideologies when compared to liberals (*ibid*., 2015). Flaxman, Goel and Rao (2016) found a positive association between the use of electronic media[19] and ideological distance between voters and concluded that "the next generation of Internet users may increasingly rely on social media to obtain news and opinion, with corresponding implications for ideological segregation".

While in the United Stated the relation between ideology and contact with dissonant information have been empirically tested and contradictory evidences were found, for Latin American countries there is a lack of studies addressing these questions. For the U.S., this research area gained relevance in 2004 when politicians started to use microblogs to communicate with their voters. Electronic media played an especially important role in Obama's 2008 campaign, however, 2016 was the year that information and communication technologies started to be insistently portrayed as powerful tools, maybe capable of influencing elections[21].

For Latin America, 2016 also became a milestone when - after the spread of the news that American elections could have suffered external influence and data about millions of voters leaked and were used to create tailored political ads through social networks - civil society, governments and scholars started to dedicate special attention to the matter. The next topic, therefore, is dedicated to the analysis of the literature about the effects of the usage of electronic media in Brazil, especially in 2018's presidential campaigns.

4. ELECTRONIC MEDIA AND BRAZIL'S PRESIDENTIAL RACE

In 2018, electronic media/internet was the most used tool to gather political information in Brazil after television. While the former grew 1% from 2017 to 2018, the latter fell by 19.1%. For Latin America[22], the same pattern was observed: in 2017, 36.8% of respondents claimed using electronic media/internet to search for political information, while in 2018 this percentage went up to 39.3%.

[18] The sample was not representative of the population, since Facebook users are, according to the authors, "younger, more educated, and more often female as compared with the U.S. population as a whole". Furthermore, the sample included only individuals who self-reported their ideology on their Facebook page, which turned the sample even smaller.
[19] Specifically social networks and search engines.
[21] Cambridge Analytica's scandal, in special, helped to "spread the word" worldwide.
[22] Using data from the 18 countries covered in *Latinobarómetro*'s survey.

Those questions became increasingly important in Brazil when a succession of unusual events occurred during 2018's presidential campaign. *Lula*, the candidate that led the polls in the beginning of the electoral year was ruled out from the race by Brazil's electoral court (*Tribunal Superior Eleitoral*, TSE) due to criminal convictions. Furthermore, another candidate, *Jair Bolsonaro*, was stabbed during a rally in the southeast of Brazil. Those events provoked intense debates, both online and offline, about how they were perceived by different ideological groups and polarization in the electorate. Machado et al. (2018) found, analyzing Twitter data from 2018, that "Brazil's political discourse on social media is highly partisan".

Carvalho, França, Goya and Penteado (2016) analyzed Brazilians' Twitter activity during protests that arose in 2013, 2014's presidential campaigns and, lastly, 2016, when the president by then, Dilma Rousseff, was impeached. They observed discussions concentrated in two poles: Dilma's and Aécio's[24] supporters, "protest goers" and "protests protestors", impeachment supporters and opposers. They also presented evidences that pointed to the intensive and continuous use of automated accounts by both groups to promote their arguments. Finally, following the *echo-chambers* and *homophily* theories, Alves and Mutsvairo (2019)[25] investigated whether using Facebook to gather political information could deepen political cleavages in Brazil. They found that most respondents discuss politics on Facebook (61%), but don't access pages with dissonant viewpoints (54%).

5. DATA AND METHOLOGY

As in the United States several differences between liberal and conservatives were observed, this research will look for potential differences between *leftists* and *rightists* in Brazil regarding political information search. The hypothesis, therefore, is that ideology affects the way voters look for information about politics. Data used in the analysis developed were taken from 2016, 2017 and 2018's *Latinobarómetro*, a public opinion survey conducted since 1995 within 18 Latin American countries. It measures a range of issues, from satisfaction with democracy to trust in public institutions. To analyze the

[24] Dilma was the candidate running for reelection, later elected and removed from office through an impeachment process, while Aécio Neves was the main runner-up.

[25] Although the research presents methodological issues, such as the small number of observations and the lack of information about respondents' demographic characteristics, it represents a good effort to understand individuals' behavior on social media when it comes to politics.

question previously mentioned, the relation between ideology and electronic media usage to gather political information, *table 1* below shows data used.

Before introducing the methodology, it is necessary to address some limitations and briefly conceptualize the term *ideology*. That are two main definitions broadly used in the literature: one that refers to policy preferences and another that is related to affect. Ideology is measured, in this paper, by responses individuals give to the following question: "in politics, people normally speak of 'left' and 'right'. On a scale where 0 is left and 10 is right, where would you place yourself?". As it is not possible to directly observe how people understand the question, correlation tests were performed in order to analyze if the self-placement in the scale was associated to any other response related to policy preferences or attitudes. The results were inconclusive, since the highest correlation coefficient found was 0.24, regarding what Brazilians think of Cuba[26]. It is important to keep in mind that this is a significant limitation this analysis incurs.

The analysis was developed using multivariate logistic regression models, since the dependent variable is binary, only taking 0 or 1 as response. The independent variable, left-right scale, assumes values between 0 (left) and 10 (right)[27]; individuals were asked to place themselves within this scale. For Brazil, in 2018, the original dataset had 1.204 respondents and is representative of the population; the ones used for this specific year, however, were filtered by valid responses to the variables used in each one of the models. For 2017, the original had 1.200 respondents, while the used had 854. For 2016, the original had 1.204 and the used 974[28].

In the next section, 5 logistic regression models analyzing Brazil's case will be presented, compared and discussed. The first three concerning 2018, one for 2017 and another one for 2016. Subsequently, 4 additional models will be presented, one for each of the other four Latin American countries which held presidential elections[29] in 2018: Colombia, Costa Rica, Mexico and Paraguay. Voters look for information in order to decide between candidates and, furthermore, in campaign years, information about topics related to politics, as well as ideology, become more salient and readily available to these

[26] The question wording was: "*Me gustaría conocer su opinión sobre los siguientes países u organizaciones que le voy a leer ¿Tiene usted una muy buena (1), buena (2), mala (3) o muy mala (4) opinión sobre?".* Cuba was one of the options along with Russia, China, the European Union, the United States and India.
[27] It will be referenced as *ideology*.
[28] Datasets and additional documents are available here.
[29] Except for Venezuela due to its controversial elections and because it is the only one not classified as a democracy by The Economist Intelligence Unit's Democracy Index or Varieties of Democracy.

voters[30]. Finally, a comparative analysis will be performed in order to understand if the results encountered for Brazil are also observable in other countries, which could maybe point to a regional phenomenon, or if they are only domestically applicable.

Year	Dependent Variable	Independent Variable	Controls
2018	Usage of electronic media/internet to search for political information[31] (*P19ST.G*)	Self-positioning in Left-Right scale (*P22ST*)	Subjective social class (*S1*) Ethnicity or race (*S6*) Education (*S10*) Age (*EDAD*) Access (*S21.O*)
2017	Usage of electronic media/internet to search for political information (*P15ST.H*)	Self-positioning in Left-Right scale (*P19STC*)	Age (*EDAD*) Ethnicity or race (*S10*) Subjective social class (*S1*) Education (*S14*)
2016	Usage of electronic media/internet to search for political information (*P26STH*)	Self-positioning in Left-Right scale (*P17ST*)	Ethnicity or race (*S9*) Education (*S13*) Subjective income (*S4*) Age (*EDAD*)

Table 1 - Variables used for the base model and its codes according to Latinobarómetro's codebook.

6. RESULTS

Table 2 below shows the results for the first three models. In all three, the use of internet/electronic media to search for political information is the dependent variable. In the first, ideology is the independent variable and six individual-level controls were added: social class, ethnicity, education, age, sex and access to the internet within the household. These controls were taken from the existing literature on the difference between ideological groups, with studies that analyzes especially the case of United

[30] Therefore, less costly.
[31] 1 if the respondent mentioned this option, 0 if he didn't.

States' political environment, which show notable and historical differences in age, income, sex and ethnic groups between Republicans and Democrats.

Age, education and ideology presented significant and positive coefficients ($p \leq 0.05$). For age, the negative sign means that younger individuals are more likely to search for political information through the internet. Education presented a relatively

	(1)	(2)	(3)
	Internet Usage	**Internet Usage**	**Internet Usage**
Ideology	0.055* (0.027)	0.057* (0.028)	0.064* (0.031)
Social Class	-0.099 (0.084)	-0.144 (0.087)	-0.169 (0.092)
Ethnicity	0.021 (0.043)	0.025 (0.044)	0.048 (0.046)
Education	0.204*** (0.022)	0.178*** (0.023)	0.174*** (0.025)
Age	-0.022*** (0.005)	-0.015** (0.005)	-0.020*** (0.006)
Sex	0.217 (0.151)	0.240 (0.153)	0.308 (0.164)
Access	-0.778*** (0.171)	-0.593*** (0.177)	-0.608** (0.187)
Twitter	-	0.655* (0.305)	0.611 (0.311)
WhatsApp	-	0.893*** (0.207)	0.759*** (0.219)
Satisfaction Economy	-	-	0.258 (0.150)
Trust in Gov	-	-	0.152 (0.132)
Trust in Media	-	-	-0.097 (0.093)
Support for Democracy	-	-	-0.326*** (0.092)
Constant	-0.731 (0.627)	-1.633* (0.670)	-1.974* (0.888)
N	956	956	869

Table 2 - The coefficients presented are for logistic regression models.
** p-value ≤ 0.05, ** p-value < 0.01, *** p-value < 0.001.*

high effect, as expected, and it points that more educated individuals are more likely to use the internet for this mean. Access consistently presented a negative coefficient, different from what was expected, which means that individuals who don't have access to the internet in their households are more likely to use the internet to search for political

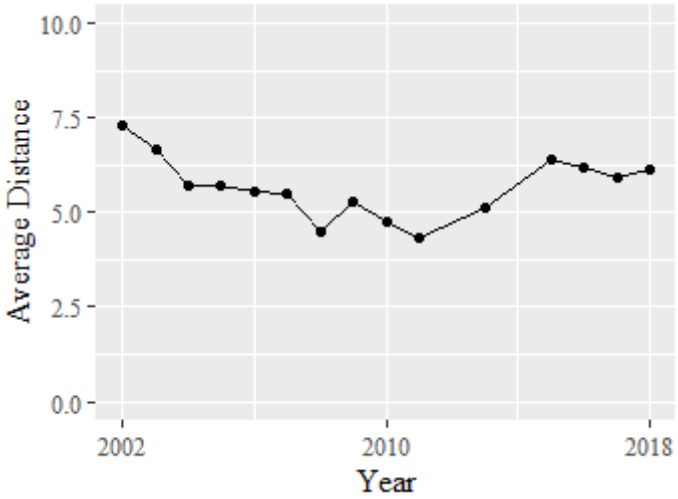
information. Finally, ideology shows a positive and significant effect (*p= 0.03*), which means that a raise in the self-reported ideology scale is associated with a raise in the probability of the response variable being equal to 1. The magnitude of this effect, however, is less trustworthy. When the odds-ratio for this explanatory variable is calculated, using a 95% confidence interval, we obtain that an additional unit in the ideology scale could raise the probability of using the internet to search for political information in between 0,05% and 12%. In the second model (2), two more variables were added: the first, whether the respondent uses Twitter; as for the second, WhatsApp. It is interesting to observe that using WhatsApp[32] sharply raises the odds of looking for political information online.

In the third model (3), four other variables were added to test whether they would influence the odds of looking for information online or mitigate the effect of ideology on the dependent variable: reported satisfaction with the economic situation of the country, trust in the national government, level of confidence that the media works to improve citizen's wellbeing and support for democracy. The coefficient for "support for democracy" was the only one among those added with *p-value* ≤ 0.05. This variable goes from 1 to 3; one for respondents who affirmed that democracy was preferable than other regimes, two for the ones who claimed that sometimes they would prefer an authoritarian government and three for the ones who stated that "for people like them, it didn't matter whether they lived in a democracy or not". The negative sign, therefore, shows that people who support democracy are more likely to search for information online than those who are indifferent or those who would prefer authoritarian regimes under some circumstances. Also, *rightists* were more supportive of democracy (39%) than *centrists* (37%) or *leftists* (31%), although they were, at the same time, slightly more supportive of the adoption of authoritarian regimes under some circumstances (16%, left = 14%, center = 14%).

It is also important to comprehend the "structure" of the ideological spectrums. Looking at *Latinobarómetro*'s datum, a significant increase in the average distance between *leftists* and *rightists* is noticeable in 2018 when compared to 2017 (6.111 versus 5.920, respectively); in 2016, however, this distance was even higher (6.177), *graph 1*

[32] These variables are not related to political information, the respondent is only asked whether he uses these applications or not, without any further specifications.

bellow shows the time series for the average distance from 2002 to 2018[33]. Furthermore, the average score for self-reported *leftists* was 1.764 in 2017 and in 2018 it went up to 1.899; meaning that they moved slightly away from the extreme left of the ideological spectrum. As for *rightists*, an opposite trend was observed: they moved towards the extreme right. Comparing 2016 and 2017, however, *leftists* moved towards the left-extreme, while *rightists* moved away from the extreme right. Curiously, the coefficient sign for ideology in 2017 was negative, although not significant.



Graph 1 - Average distance between left and right from 2002 to 2018.

There are notable differences between those on the left, center and right in Brazil in 2018 that are worth mentioning. Approximately 37% of respondents placed themselves on the left side of the ideology scale (scores from 0 to 4), 25% on the right side (6 to 10) and 24% on the center (score 5). *Rightists* were, on average, older than the other groups (44.83, left = 40.77, center = 39.63), men were the majority (54.6%, left = 42.3%, center = 53.3%), almost 20% had superior education or more (left = 14.4%, center = 26.3%), had the highest percentage of self-declared whites (40.4%, left = 28.6%, center = 36.3%) and the lowest of self-declared blacks (21%, left = 24%, center = 22%). On the other hand, *leftists* showed the highest percentage of Catholics (60%, right = 59%, center = 53%) but the lowest percentage between those who declared to be practicing or very practicing of their respective religious commitment (44.1%, right = 50%, center = 46%) and *centrists* showed the highest percentage of self-declared Evangelicals (9.7%, left = 6.8%, right = 5.6%).

[33] Except for 2012 and 2014. *Latinobarómetro* didn't apply its survey in these mentioned years.

Table 3 below presents logistic regression models for 2016 (4) and 2017 (5). For both models, education and age were, once again, positive and statistically significant: younger and more educated individuals were more likely to look for information about politics on the internet. Ideology didn't approach significance in neither of them, nor sex. Subjective social class, however, was negative and significant in 2016, meaning that voters from "lowest" classes were less likely to look for information about politics online (since 1 is the "highest" subjective class and 5 the "lowest"). The variable used for controlling for internet access in 2018's models wasn't available for 2017 nor 2016. Also, for both years, the question used for the dependent variable, that is: "how do you get informed about politics?", had two possible answers that referred to electronic media: "internet" and "social networks". These responses were concatenated and recoded to be used as a single variable.

	(4) **Internet Usage - 2016**	(5) **Internet Usage - 2017**
Ideology	-0.019 (0.027)	0.046 (0.031)
Social Class	-0.159* (0.079)	-0.026 (0.089)
Ethnicity	0.056 (0.044)	0.062 (0.046)
Education	0.219*** (0.023)	0.241*** (0.029)
Age	-0.023*** (0.005)	-0.032*** (0.006)
Sex	0.102 (0.150)	-0.035 (0.156)
Constant	- 1.972*** (0.502)	-2.078** (0.668)
N	974	854

Table 3 - The coefficients presented are for logistic regression models.
** p-value ≤ 0.05, ** p-value < 0.01, *** p-value < 0.001.*

Finally, *table 4* presents four logistic regression models for Colombia (6), Costa Rica (7), Mexico (8) and Paraguay (9) in 2018. Besides Brazil, these four countries also held presidential elections in the mentioned year. In Costa Rica approximately 61% of the respondents used the internet to gather political information; Colombia, 41%; Mexico, 32% and Paraguay, 23%. As the access to the internet varies across these countries[34], the

[34] Costa Rica leads the group, with 68% of respondents having access to the internet in their households, followed by Brazil, with 63%; Colombia, 46%; Paraguay, 43%; and, finally, Mexico with 41%.

variable “access”, that measures the number of respondents who declared having internet access in their households[35], work as control to the differences in access to the internet between countries.

There is, however, an important observation: only respondents from Mexico and Brazil were interviewed before election day, as for the remaining three countries, interviews were conducted after the results. As ideology was significant for Brazil and approached significance[36] in Mexico (*p=0.07*), it may be the case that this effect was temporary and may have gone away after presidential campaigns were over[37]. It is also observable that for Mexico this coefficient is negative, which means that individuals

	(6) **Internet Usage Colombia**	(7) **Internet Usage Costa Rica**	(8) **Internet Usage Mexico**	(9) **Internet Usage Paraguay**
Ideology	-0.022 (0.026)	0.013 (0.030)	-0.065 (0.036)	-0.020 (0.037)
Social Class	-0.138 (0.082)	-0.057 (0.096)	0.108 (0.119)	-0.232 (0.124)
Ethnicity	0.019 (0.059)	0.059 (0.073)	0.089 (0.079)	0.173* (0.087)
Education	0.160*** (0.021)	0.097*** (0.023)	0.203*** (0.030)	0.111*** (0.033)
Age	-0.031*** (0.005)	-0.038*** (0.005)	-0.023*** (0.007)	-0.036*** (0.007)
Sex	-0.013 (0.148)	-0.011 (0.172)	-0.130 (0.182)	0.017 (0.181)
Access	-0.430** (0.158)	-0.668*** (0.182)	-0.727*** (0.190)	-0.342 (0.184)
Constant	- 0.204 (0.648)	-2.129** (0.719)	-0.940 (0.843)	-0.575 (0.916)
N	947	740	673	735

Table 4 - The coefficients presented are for logistic regression models.
** p-value ≤ 0.05, ** p-value < 0.01, *** p-value < 0.001.*
a – *The actual values for this coefficient and its standard error were 0.054992 and 0.027648, respectively.*

closer to the left side of the ideological spectrum were more likely to search for political information through the internet than the ones closer to the right side. Age and education

[35] Code *S21.O.* Variable assumes values 1 - if the respondent has access to the internet in his household - or 0 - if he doesn’t.
[36] The reference value for significance here establish was *p-value* ≤ 0.05. When the *p-value* for a coefficient doesn’t fit within this limit, it is considered not significant for this specific study. It doesn’t mean, however, that the variable doesn’t exert influence over the dependent variable, it only means that the model developed wasn’t able to provide empirical evidence regarding the association between these factors.
[37] Furthermore, Mexican presidential elections took place in July, while Brazil elected its new president in October.

presented positive and statistically significant coefficients in all four models. For Paraguay, ethnicity was significant ($p < 0.05$).

7. DISCUSSION

The higher the score in the ideology scale (0 = Left, 10 = Right), the greater the odds of using electronic media to search for political information, even when controlled for sociodemographic factors, such as age, income, education and internet access. Interestingly, this effect was only observed for Brazil in 2018. What are the implications of these findings? Does it mean that the ones who self-identified as being part of the right are more likely to be immersed in *echo-chambers* and become less tolerant with dissonant opinions over time?[38] Or that they are more prone to have contact with cross-cutting information?[39] Why was this effect significant in 2018? Was it due to some endogenous factor of the electoral year? To higher campaign investments in digital media?

Those questions will become increasingly important with further developments of ICTs and falling costs of internet access. If the effect of television, newspapers and radio on voter's behavior were – and still are – central to Political Science, electronic media is proving to be "the next big thing", since voters are relying progressively in these tools to gather information and politicians are dedicating large part of their budgets to tailor advertisements. In Brazil's 2018 presidential race, the two main candidates were accused of using automated accounts on WhatsApp to diffuse favorable content and misinformation campaigns[40] (Campos Mello, 2019).

Those events are in consonance with one of the findings presented, that using WhatsApp raises the odds of looking for political information online. Even though it may seem intuitive, it demonstrates, empirically, the power that this social network has. Those results also raise the question about whether voters are relying in this tool as an easier way to find political information, and, therefore, politicians are using it or if voters are being influenced by politicians to use these networks to search for political information

[38] Which could lead to an increase in political polarization over time.
[39] Which would maybe encourage "democratic" debates.
[40] 2018 was the first presidential campaign year with a regulation regarding digital platforms. Candidates were allowed to run paid ads, as long as it was financed by the candidate, his party or coalition. The resolution (*Res. TSE nº 23.551/17, art. 24*) is available in Portuguese in the following address: < http://www.tse.jus.br/legislacao-tse/res/2017/RES235512017.html >.

through the promotion of political content. Put in another way: do people like to use WhatsApp to search for political information or were they induced to do it?

Furthermore, in 2014's presidential campaigns, a study showed that approximately 11% of Twitter generated discussions were attributable to *bots*[41] (FGV DAPP, 2017[42]). Furthermore, Transparency International's Global Corruption Barometer, a public opinion survey, pointed that 76% of Brazilian respondents thought that *fake news* were frequently spread to influence voting outcomes in the country[43].

It also sheds a light on the difference between those on the right and those on the left when it comes to information search. Using the internet was the only process affected by ideology[44]. While for *rightists*, the ones closer to the extreme of the scale seemed to be more likely to use the internet, for *leftists*, this effect wasn't significant[45]. Also, according to a survey led by *Datafolha*, *Jair Bolsonaro*'s (the right-wing candidate) supporters used social networks more than *Fernando Haddad*'s (the left-wing candidate) voters to read information about elections and politics[46]. Would it be one of the factors that could have contributed to explain the raise in the average ideology score between 2017 and 2018 for the *rightists*?

The hypothesis that I would suggest is that internet usage could be a proxy for information filtering and that the ones closer to the extreme-right of the scale were more likely to select available information and avoid contact with cross-cutting opinions, as, in Brazil, this is easier to do when using the internet but not other means, such as newspapers or cable television channels. This would explain why this difference between ideological groups was only observed with political information search through the internet. Within this discussion, an interesting argument is introduced by Pierce, Redlawsk and Cohen (2016) when pointing that "social activities[47]" on online content can work as cues to other

[41] Automated accounts which try to simulate human behavior in social networks.
[42] Bots, social networks and politics in Brazil: a study on illegitimate interferences with the public debate on the web, risks to the democracy and the 2018 elections. Rio de Janeiro: FGV, DAPP, 2017. Available at: < https://bibliotecadigital.fgv.br/dspace/bitstream/handle/10438/18695/EN_bots-social-networks-politics-brazil-web.pdf?sequence=4&isAllowed=y >.
[43] It was the country with the highest percentage within Latin America and the Caribbean.
[44] The other processes tested were searching for political information with the family, friends, work and study peers, radio, newspapers, television, Facebook, Twitter, YouTube and "others". The coefficient for ideology with using the internet as the dependent variable was the only one that remained significant after controlling for confounding variables.
[45] The model developed and additional tests performed are available in *Appendix B*.
[46] Whatsapp: Bolsonaro's voters = 53% vs. Haddad's voters = 40%. Facebook: 51% vs. 42%. Instagram: 22% vs. 20%. Twitter: 8% for both groups (available at page 42).
[47] Such as "likes" or "upvotes", according to the authors.

voters, what may influence their behavior regarding the amount of information they decide to acquire and also the content they access[48].

One possible explanation could be that, as republicans in the United States, Brazilian *rightists* are more cynic towards mainstream media. This distrust would work as a mechanism connecting internet usage and polarization. In other words, the distrust in traditional media would foster the usage of the internet to search for political information, what would, in turn, make individuals access information that strengthen their previous opinions, bringing implications to ideological polarization[49]. This would be one of the factors that would help explaining the raise in the ideology score for the right in 2018. Both *leftists* and *rightists*, however, showed similar patterns regarding trust in media[50]. On the other hand, a brief analysis available in the *appendix C* revealed that there may be differences between groups of voters not necessarily based on ideology, but on candidate choice. It was observed that the average score for trust in media was slightly smaller for the ones who reported having voted for the right-wing candidate. Data used, however, didn't allow to analyze separately traditional and alternative media, since *Latinobarómetro*'s survey question doesn't differentiate between those categories. The results obtained did not provide substantial support for these inferences, but they seem to point to a way where those factors are somehow connected.

There may be a reverse causation problem to this analysis: the direction of the relation between political information search through the internet and ideology can be the opposite of the one presented in these regression models here presented, as discussed in the previous paragraph. Maybe voters who look for information online, in accordance with *echo-chamber* and *homophily* theories, tend to strengthen their opinions and become closer to the extreme of the scale. This study, however, didn't intend to search for causal relations, but to identify possible associations between variables that would provide interesting insights for further research.

[48] For example, by avoiding negative information about a candidate they like.
[49] As mentioned in section 3, a positive association between the use of electronic media and ideological distance between voters was observed by Flaxman, Goel and Rao (2016). Also, this argument points to a cycle, where each process would reinforce the other.
[50] Around 50% on both sides said they trust that the media works to improve citizen's wellbeing. America's Barometer data was also used and the same pattern was observed.

Affective polarization[51] is also another interesting theme to be analyzed within Brazilian voters. In 2018, *antipetismo* became a popular term to describe a sentiment of rejection towards a traditional leftist party (PT[52]), which held the presidential office from 2002 to 2016. Guedes Neto (unpublished, 2019) affirms that ideological radicalism is a good predictor for increases in affective polarization and Iyengar, Sood & Lelkes (2012) found that affect towards a specific party can be strengthen by negative campaigns, which was something quite common for Brazilians in 2018. Social networks facilitated the spread of those campaigns and several diffused false information; a more intensive contact with these means could have led to a strengthen in one's opinions and positions, so that they would feel more connected with ingroup peers and dislike outgroup voters. In 2019, for example, 39.7% of Brazilian GCB's respondents[53] agreed with the following statement: "you can tell if a person is good or bad if you know their politics".

Electronic media, more broadly, and the internet, more specifically, have been depicted as tools that would generate great incentives for the electorate to search for information about politics by lowering its costs. Richey and Zhu (2015), however, found that, in some cases, using this mean didn't improve political interest, efficacy nor political knowledge in the United States[54]. Other authors point that the internet will widen already existent informational gaps between different social groups and intensify political cleavages through "motivated selection" of contents voters decide to see online. Although this paper adopts a cynic perspective regarding the potential of the internet in producing "well-informed-democracy-enthusiastic" citizens, it also strongly encourages its readers to dig deeper into the theme, to go beyond its own *echo-chamber* and to search for contradictory evidences, as paradoxical as this statement may sound.

[51] When the cleavages are not necessarily based on political preferences, but instead in group identification. Positive affect is developed towards in-group individuals and negative towards out-group.
[52] *Partido dos Trabalhadores* or "Worker's Party".
[53] The aforementioned Transparency International's Global Corruption Barometer.
[54] They stated that "after using the Internet for more than nine months, new users do not demonstrate greater political interest, political knowledge, or efficacy, when compared to the control group. After recontacting these groups after two and a half years, there is no change from their starting levels before they had access. These findings raise serious doubts about the previous observational findings of the benefits of the Internet for those who are not currently having access". Furthermore, several authors observed that aggregate levels of political knowledge didn't grow with observed raises in internet usage to search for political information.

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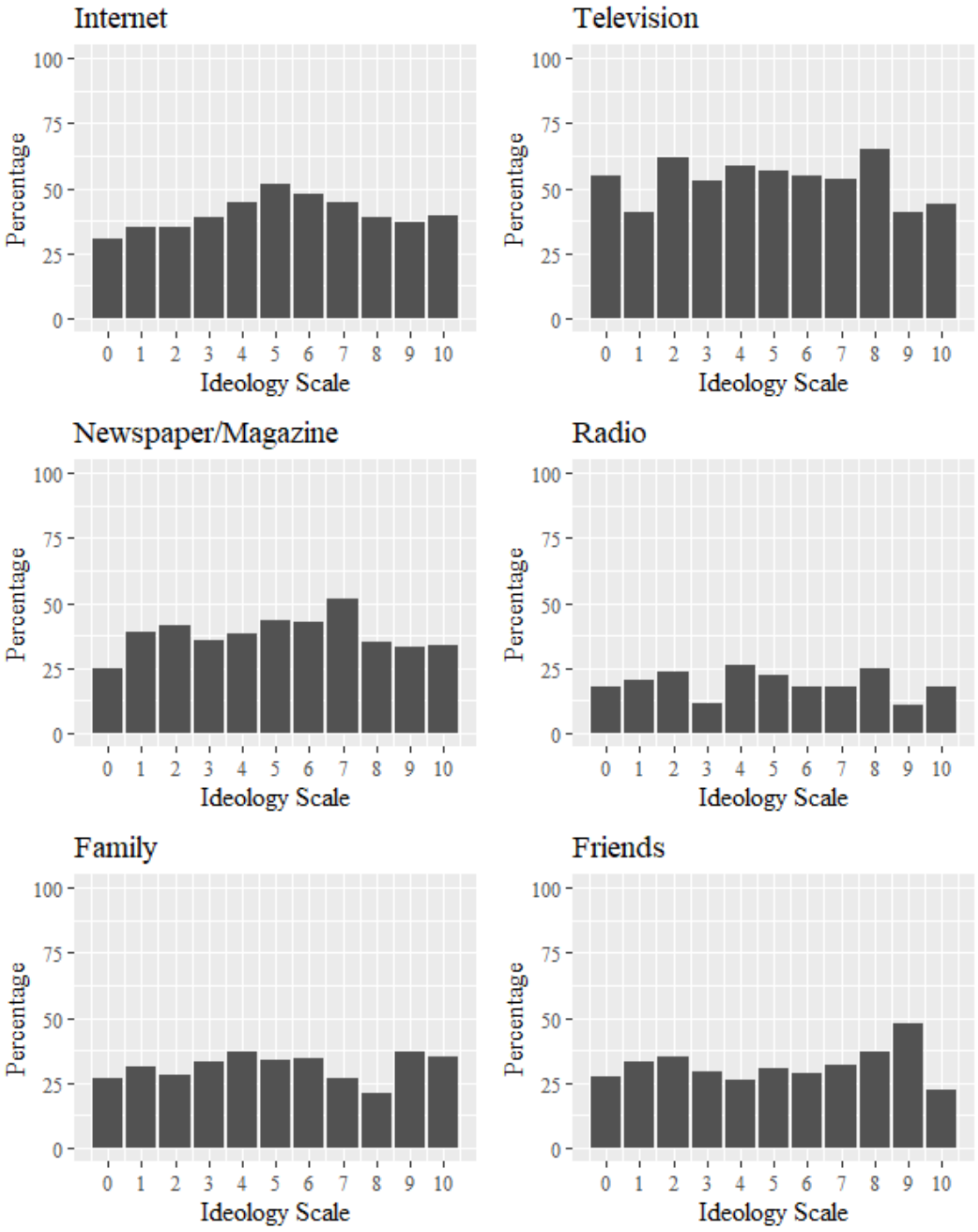
APPENDIX A:



Graph 2 – Percentage of individuals who declared having used the tool in the title of each graph to look for political information in each level of the ideology scale.

Different information consumption patterns are observed depending on the instrument used to do so. It is also interesting to analyze the multiplicity of tools used to gather political information conditioned to the self-placement in the ideology scale. Also, I concatenated available variables regarding political information search, which resulted

in a new variable that goes from 1 to 11. A brief bivariate linear regression analysis didn't show a significant relation between those factors; curiously, *centrists* - that is, individuals who placed themselves in the number 5 of the ideology scale - presented the highest average score for this variable (2.98, followed by *rightists* = 2.64 and *leftists* = 2.55[55]). When the independent variable is polarization, however, a negative and significant association is observed, meaning that more polarized individuals tend mobilize less sources to look for political information.

[55] The difference between means of left and right, however, wasn't significant.

APPENDIX B:

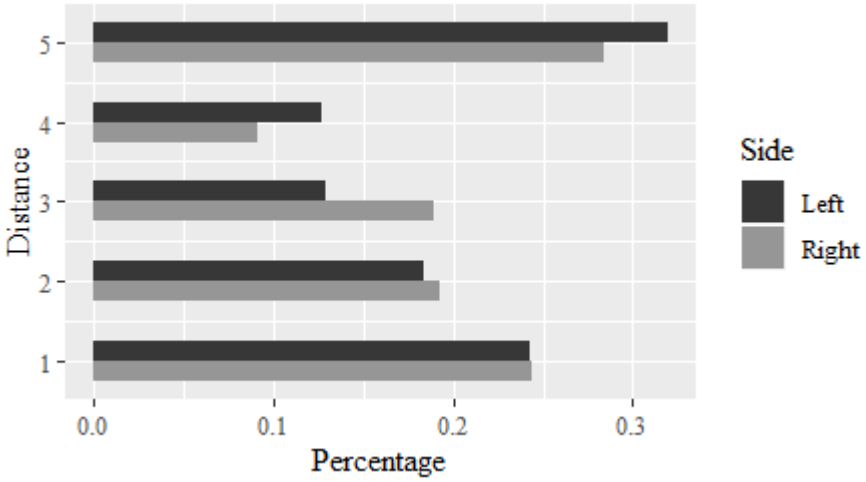
Additional tests were performed to investigate if the effects found were due to different behavioral patterns between *leftists* and *rightists* regarding political information search through the internet or if it had to do with polarization: that is, were voters from both ends of the spectrum (therefore "more polarized") more likely to look for information online? First, I developed two logistic regression models like the second one presented in section 6, but this time splitting two groups: one for *leftists* only and another for *rightists* only. Ideology remained positive and significant in the latter, but lost significance in the former, as showed in *table 5* below. When the variable access to the internet is added, however, ideology loses its significance; it seems like there is a difference between groups, but this difference is not significant within *leftists*.

	(10) **Internet Usage Left**	(11) **Internet Usage Right**	(12) **Internet Usage Left**	(13) **Internet Usage Right**
Ideology	0.101 (0.072)	0.226* (0.116)	0.101 (0.072)	0.183 (0.119)
Social Class	-0.227 (0.134)	-0.226 (0.171)	-0.199 (0.137)	-0.281 (0.180)
Ethnicity	0.114 (0.066)	-0.103 (0.098)	0.108 (0.066)	-0.097 (0.100)
Education	0.200*** (0.036)	0.381*** (0.054)	0.191*** (0.037)	0.270*** (0.055)
Age	-0.010 (0.008)	-0.020 (0.011)	-0.011 (0.008)	-0.025* (0.011)
Sex	0.356 (0.234)	0.983** (0.352)	0.348 (0.234)	1.088** (0.364)
Twitter	0.024 (0.479)	0.729 (0.598)	-0.039 (0.481)	0.619 (0.635)
WhatsApp	0.629* (0.289)	1.596*** (0.454)	0.560 (0.297)	1.404** (0.453)
Access	-	-	-0.277 (0.265)	-1.268** (0.400)
Constant	-2.911** (0.926)	-5.820*** (1.663)	-2.434** (1.032)	-3.000 (1.866)
N	404	275	404	275

Table 5 - The coefficients presented are for logistic regression models.
** p-value ≤ 0.05, ** p-value < 0.01, *** p-value < 0.001.*

Next, I subtracted the response of the self-placement in the ideology scale from 5, which is the center of the scale, and transformed all the values obtained in absolute values. *Graph 2* shows the distribution of the distance from the center for both left and right.

Then, as showed in *table 6*, I tested three models with this measure, which I refer to as "polarization", substituting ideology: the first with left and right altogether, the second with left and third with right. Polarization wasn't statistically significant in any of the



Graph 3 - Distance from the center of the ideological scale for leftists and rightists.

models, what makes it possible to reject the hypothesis that more polarized voters, regardless of their ideological position, are more likely to use the internet to search for political information.

	(14) **Internet Usage**	(15) **Internet Usage Left**	(16) **Internet Usage Right**
Polarization	-0.049 (0.040)	-0.090 (0.071)	0.164 (0.115)
Social Class	-0.114 (0.084)	-0.163 (0.134)	-0.261 (0.172)
Ethnicity	0.023 (0.043)	0.107 (0.065)	-0.088 (0.096)
Education	0.200*** (0.023)	0.202*** (0.036)	0.327*** (0.053)
Age	-0.021*** (0.005)	-0.015* (0.008)	-0.037*** (0.010)
Sex	0.177 (0.149)	0.355 (0.233)	0.930** (0.341)
Access	-0.789*** (0.170)	-0.390 (0.255)	-1.450*** (0.392)
Constant	- 0.245 (0.617)	-1.495 (0.995)	-0.617 (1.364)
N	956	404	275

Table 6 - The coefficients presented are for logistic regression models.
** p-value ≤ 0.05, ** p-value < 0.01, *** p-value < 0.001.*

APPENDIX C:

Welch's t-tests were performed to compare the average scores for the variable "trust in media" between different groups. At first, I used *Latinobarómetro*'s 2018 data to analyze if *leftists* and *rightists* diverge; the result didn't allow to reject the null hypothesis that the difference between these groups wasn't significant. I repeated the analysis, but this time using America's Barometer 2019 data and the result was, once again, not significant. Then, as showed in *tables 7* and *8*, I compared two other groups that America's Barometer includes in its questionnaire: voters from the left-wing candidate (Fernando Haddad) and the right-wing candidate (Jair Bolsonaro); this time, however, the difference of means turned out significant, showing that Bolsonaro's voters presented slightly lower scores for the variable trust in media, that is coded from 1 to 7, with the first being no trust at all and the latter a lot of trust. This difference, however, was quite small. Furthermore, ideology and candidate choice, when comparing only Bolsonaro's and Haddad's voters, showed a point biserial correlation coefficient of 0.30.

	Lower CI	**Upper CI**	***t***	***df***	***p-value***
Dif. Trust in Media	0.109	0.681	2.712	481.22	0.007

Table 7 – Welch's two samples t-tests. 95% CI.

It is also important to mention that the questions used as dependent variables don't differentiate traditional from "alternative" media, what brings important limitations to the analysis. The question wordings are: (1) Latinobarómetro - "Please, look at this card and tell me, for each of the groups, institutions or people on the list, how much confidence do you have that they operate to improve our quality of life: Media"; (2) America's Barometer – "To what extent do you have confidence in the media?".

	N	**Mean**	**Standard Deviation**
Bolsonaro	547	4.351	1.976
Haddad	236	4.746	1.820

Table 8 – group mean for variable trust in media.