Gender and the Digital Divide in Latin America

Tricia J. Gray

Department of Political Science
University of Louisville

Ford Hall Room 209
Louisville, KY 40292

tricia.gray@louisville.edu

Jason Gainous

Department of Political Science
University of Louisville

Ford Hall Room 203
Louisville, KY 40292

jason.gainous@louisville.edu

Kevin M. Wagner

Department of Political Science

Florida Atlantic University

384C Social Science Bld.

Boca Raton, Florida

 kwagne15@fau.edu

**Abstract**

We analyze differences in how men and women in Latin American countries are utilizing the Internet to identify a possible regional gendered digital divide in Internet use. The extent and degree of this gender digital divide is explored across countries with varying degrees of digital freedom. We employ a series of random effects models utilizing individual level data from the 2010 Latino Barometer merged with country level data obtained from the United Nations Gender Inequality Index. Our results suggest that Latin American men tend to use the internet in general more than women. Men also use more social media, and they gather political information more frequently. In addition, Internet use is higher across these categories in countries with more gender equality. The potential for the internet to serve as a social and political equalizing force in Latin America is stymied in part by the gendered digital divide.

The internet has seen exponentially high growth coupled, in part, with the tremendous increase in the availability of access points such as smart phones and access speed through broadband technology (Gainous and Wagner 2014). With its rapid growth, penetration and ability to allow any person to access political information and organize political activities, the internet has be seen as a democratizing force in developing countries (Wagner and Gainous 2013). Some propose that the internet offers the means by which those disadvantaged under the current system can gain influence and political power. Citizens, political activists, and politicians, who in the past lacked the resources and position to compete politically, can use the internet to more evenly balance the political field by creating more opportunities for ideas counter to those sent by and through the existing media power structure (Barber 2003; Corrado and Firestone 1996; Hagen and Mayer 2000).

However, the ability to access and use the internet is not evenly distributed (Gainous and Wagner 2007). Optimistic views are tempered by concern that internet can be simply a new tool that will be studied and eventually captured by the dominant political players. This less hopeful view suggests that the internet will be a normalized influence after its potential is harnessed by existing authorities, rather than the means to open up opportunity for those outside the prevailing power structure. If so, there likely would be no durable shift in the basic power balance of the political systems (Bimber and Davis 2003; Hindman 2008; Margolis and Resnick 2000; Stromer-Galley 2014; Ward, Gibson, and Lusolli 2003).

A definitive statement about the internet as being either transformative or ineffective across national and cultural borders is likely too simple and overbroad an approach. We propose that this two dimensional division between equalization and normalization is likely too imprecise a construct of internet influence. We suggest that the power of the internet to influence a political system will likely vary based on context, including cultural, political and social influences within a state. Scholars have already shown that technology can have an outsized influence in autocratic states where communication and dissemination platforms are at a premium (Wagner and Gainous 2013). The effect of technology can be limited by cultural context that limits or filters the impact of its uses as well (Gainous, Wagner, and Abbot 2015).

In this paper, we narrow the focus and consider the effectiveness of the internet as a means to equalize political participation in the social and political context of Latin America. In particular, we center on whether gender norms and traditional roles in this region are likely to be overcome by the new communication and information available through the internet. While information communication technologies (ICT) are becoming ubiquitous in developing nations, there are remaining differences in the platforms for access, quality of access, and as well as potential cultural and role differences in the way men and women utilize the internet. Previous studies on the digital divide have identified many key factors that relate to people’s access to digital technology, and gender is almost always an important factor (Bimber 2001; Chen and Wellman 2003; Dixon et al. 2014; Gainous and Wagner 2011, 2014; Norris 2001). However, very little research has looked at this divide in Latin America, and to the best of our knowledge, no research has explicitly examined the cross-national divide with large-N individual level data in that region. Our analysis directly addresses this understudied area.

Before moving to the analysis, we lay our theoretical framework by examining the research on the digital divide derived mostly from studies of the high-income developed nations making up the Organization for Economic Cooperation and Development (OECD). We compare that research with emerging research on developing regions, while incorporating the literature that explicitly addresses the gender divide Based on existing theory highlighted in this review, we expected to identify a clear gender divide in internet usage, and we also expected to identify a cross-national pattern where internet usage is lower in those countries with less gender equality. If so, the potential for the internet to serve as an equalizing force, when it comes to gender equality, is seriously diminished. Our findings support this hypothesis, and are discussed below.

**The Digital Divide and Limits of Technology Based Change**

The effect of the internet on the political process in developed nations has been significant and measurable in a number of areas. The internet has altered in some important ways campaigning, fund-raising, advertising, and even political organization (Gainous and Wagner 2011; Wagner and Gainous 2009). Since it is a means to organize and disseminate political information, the internet creates a political forum outside the traditional system that provides opportunities for political actors and citizens to shape or even reshape the system (Gainous and Wagner 2014). The new medium requires new management and control strategies that are still being developed and implemented. With its relatively low cost, as well as its reach and speed, the internet has the potential to move toward equalization of the balance of power between political actors. However, this is contingent on the level of usage and penetrations as well as the social and political structure of the underlying region.

In theory, the internet is revolutionary. In practice, the evidence is more mixed (Boulianne, 2009; Bimber & Copeland, 2013). Cyber optimists contend that ICTs helps socioeconomic development and strengthen democracy, cyber pessimists assert that access to the ICTs is an obstacle making the poor poorer, reinforcing the power of elite, and hindering economic development (Hawkins and Hawkins 2003). In many measures in developed nations, the effects of the internet are significant, but size is often smaller than projected and the consistency across elections cycles is absent (Gainous, Wagner and Abbott 2015). Ultimately, the questions left unanswered are less about the power of the technology and increasingly more focused on the context of the region of state that is adopting and using the new medium. In developed nations, where internet communication technologies are increasingly common, scholars have focused more on the political actors and their ability to capture and harness the technologies so as to maintain a dominant positions. As a result, the debate over whether the internet will equalization the system or will be normalized into the dominant structure is more prominent (Gainous, Marlowe and Wagner 2013).

In other environments, the implications are different. In a nation with limited media, or government controlled media, the internet can be a new means to circumscribe state control. As a difficult to regulate medium, the internet and social media can be paradigm shifting technologies for closed states (Howard 2011). They can facilitate the development of opposing political movements and ideology by removing the barriers too communication and organization while increasing the visibility of actors and ideas that contrast with the state controlled media. (McAdam, Tarrow and Tilly 2001; Tarrow 2005; Wagner and Gainous 2013). However, such power presumes a fairly wide and even distribution of access to the internet as well as the ability to use it.

For many states, the ability of the internet to provide an alternative forum for political information is limited by structural restrictions that have a varied impact across social and demographic groupings (Gainous and Wagner 2007). Uneven access and limited ability with the new medium have become known as the digital divide. The concept was extended to the state level and was understood as the unequal division of access to technology between the OECD ‘haves’ and the developing world ‘have nots’ (NTIA 1995, 1999; Norris 2001). While access has increased in both state level groups, the underlying access divide between the developed versus the developing world still exists (Robinson and Crenshaw 2010).

In the early 2000s OECD states had between 30 and 40 percent of their national populations as internet users, while the rest of the world still had less than 5 percent users in their national populations (Guillén and Suárez 2005; Chen and Wellman 2003). Increases across the globe in more recent years have been rapid, but uneven. Penetration levels remain significantly lower in the developing world. High-income OECD states averaged 67 percent of their populations online compared to 25 percent in Latin America, 16 percent in the Middle East and 4 percent in Sub-Saharan African (Servon 2002). The disparities in the availability of ICT is closing somewhat, but the entire developing world has not reached the halfway mark of the levels of penetration in North America. Africa is lagging the farthest behind (Ali 2011; Robison and Crenshaw 2010). In the developing regions, Latin American has the highest ICT density, and one of the largest number of users, although Asia is most likely to exceed that in the near future.

Differentials in access to ICTs may have important consequences for the political process. As ICTs becoming ubiquitous in politics, the digital divide becomes significant because of uneven access to political information and government functions via e-government. In addition, offline citizens will lack empowering potential for political debate and participation (Bimber 2001; Barua and Barua 2012; Chen and Wellman 2004; Gainous and Wagner 2014; Van Deursen and Van Djik 2010). However, the problem is more than just a simple bivariate measure of physical access. The existence of access to ICTs does not mean that all people can access them in the same ways with similar frequencies. Divides between groups persist between developed and developing states as well as within almost all states (Chen and Wellman 2003). While Americans might understand access as a 24-hour broadband connection from home or a smartphone, it might be less ubiquitous in other nations. In the developing world, internet access can mean a weekly trip to the town library to check your email. It may mean that a person has an acquaintance who will let them use a computer or cell phone. Internet access may simply be some exposure to media reports as posts in social media feeds.

Ultimately, the nature, quality and context of access can and do matter. The variations in the effect of the internet across different contexts illustrates the importance of understanding the conditions under which the new technologies are introduced. While studies have found significant impacts, the magnitudes are often smaller than expected and the effects inconsistent over region or across election cycle. (Boulianne, 2009; Bimber & Copeland, 2013; Wagner and Gainous 2013, Gainous, Wagner, and Abbott 2015). While the Internet helps to remove the barriers that favor some groups and individuals in the electorate (Barber 2001), this effect is more prominent in some nations than others, leading to more research on the conditions under which political barriers are removed, and by what mechanisms.

**The Digital Divide and Latin America**

The developing world continues to have stark digital divides globally and domestically that correlate ICT access and usage with age, gender, SES and urbanity. In much of Latin America, government policy initiatives have attempted to combat the digital divide with expanded internet access through physical infrastructure such as community technology centers and public libraries. (IDB 2010; Everett 1998; Friedman 2005; Hoffman 2013; Prado 2011). Creating public access points is important for reaching disadvantaged groups who often lack other readily available means to get online. Public access points and community outreach have been a significant means of increasing access for women and ethnic minorities even in developed nations such as the U.S. (Chow et al. 1998). There is evidence that this holds true in Latin America as well. Latin America women’s organizations in Argentina and Mexico bridged the gender digital divide through “chains of access” such as directly teaching digital literacy skills and sharing access through community radio, videoconferencing, and distributing electronic newsletters in printed form at local offices (Friedman 2005).

Despite the initiatives, internet penetration levels in Latin America are low compared to OECD states. Yet, they are high in comparison to other regions in the developing world. Latin America has an average of 43 percent Internet penetration, compared to 79 percent in North America and approximately 60 percent in both Europe and Australia (Intel Corporation 2012). However, the average may be misleading as there is significant variation within the region. The digital divide within Latin American states and between them is stark in patterns of penetration, platforms for access and connection speeds. In 2011, only five states had more than one-third of their population using ICTs (Colombia, Chile, Argentina, Colombia, Costa Rica), and even in the wealthiest states, only about 1 in 10 had a broadband connection (Prado 2011).

However, a focus solely on fixed outlets for internet access may be insufficient. A more recent influence on internet growth and access is the rapid adoption of portable access devices such as smartphones. (IDB 2010; Hoffman 2004). Mobile telephony has been one of the fastest diffusing technologies in history (Robison and Crenshaw 2010). Mobile phones have potential for growth and to expand access to the internet, without the infrastructure costs of fixed access locations. However, as a means of expanding internet access, mobile phones have some limitations. There is a gender gap in mobile telephony as more men than women use mobile smartphones with internet capabilities. Mobile technologies might prove to be a more viable means of online expansion in the future. Currently, there is also a measurable age gap as younger people are more likely to use and understand mobile technologies (Abraham, Morn and Vollman 2010).

 At present, the current divisions have produced an uneven patterns of online access that appears in measures of usage. The profile of an average ICT user continues to be predominantly urban, white, male with higher SES indicators, and especially English proficiency (Gómez 2000; Chen and Wellman 2003; Prado 2011). Globally women are almost 46 percent of Internet users, and men are slightly more than 54 percent (Abraham, Morn and Vollman 2010). Interestingly, in developed nations, the distinct gender gap in internet use from the 1990s has declined sharply, and in the U.S. and France, there are now more women ICT users (Dixon et al. 2014; Intel Corporation 2012). Higher-income post-industrial societies have a small gender access divide because of the ubiquitous nature of digital technology in those societies. However, divides within many of these nations, even if declining, do persist based on age, income, education, and gender (Bimber 2001; Chen and Wellman 2003; Norris 2001).

Similar patterns of a closing gender gap in access are seen in emerging middle-income states in Latin America (e.g., Mexico, Brazil, Chile) (Prado 2011). In fact, Latin America has one of the lowest gender digital access gap at only 10 percent. The gap in Africa is nearly 45 percent, and about 35 percent in South Asia, the Middle East and Northern Africa (Intel Corporation 2012). However, the small gap can be misleading when sub-regions in the area are compared. For some regions the gender divide is substantial and appears more intractable. Latin America has distinctive gender gaps based on internal development by region or even internally within various states. The digital divide in the region marginalizes the rural, poor, and illiterate populations within nations in a way that actually parallels that gap between the developing and developed states.

**More than Access: Gender and the Internet**

The gender lens on the digital divide is not just about a binary measure of access or no access. Gender differences persist across the nature, quality and frequency of access. Research on the digital divide has recently shifted from focusing on inequalities of access to consider digital literacy and usage (Van Deursen and Van Djik 2014; Gainous and Wagner 2011; Min 2010; DiMaggio and Hargittai 2001). Scholars suggest various dimensions along which divides might exist at this second level. These include technical means such as software, hardware, connectivity; autonomy of use; geographic region; quality of access; patterns of Internet usage; social support networks for assistance with ICTs; and digital literacy skills to use ICT effectively (Min 2010; Gainous and Wagner 2011; Hoffman 2004; Van Duersen and Van Djick 2014).

Further, gender influences the frequency and manner of use. In Latin America, women are disproportionately more moderate users of the internet, whereas men are more often high frequency users. Differences in both the amount and type of internet usage between men and women can have a significant impact on the ability of this new medium to equalize political engagement and participation. Social networking via the internet has a positive effect on political participation (Bode 2012; Gainous and Wagner 2011; Valenzuela, Park, and Kee 2009). Using the internet generates politically relevant social capital disproportionately among the portion of the population that actually participated in online social networking (Gainous, Marlowe, and Wagner 2013). If men are more likely to use the internet and social media, then the benefits, such as increased political participation, will be uneven across gender.

Beyond frequency of use, there are gender variations as to usage as well. Once online, women are more likely to spend their time online in social aspects of the Internet (Abraham et. al. 2010). Men are more likely than women to access political information in their social networks (Gainous and Wagner 2014). Men favor the internet for the experience it offers, while women prefer it for the human connection it promotes (Fallows 2005). Email has been linked to the growth in women’s adoption of the internet, and it continues to be a category where women spend much of their online time (Pew Internet 2000; Abraham et. al. 2010). A recent ComScore report declared that, “Women are more social the world over” (Abraham et. al. 2010, 8).

The importance of internet and social media is not just in a measure of physical usage. Increased use of online social networking more strongly impacts users that have higher levels of politically relevant exchanges in their networks (Klofstad 2007, 2009; McClurg 2003). The internet will not affect political participation as significantly if the usage is unrelated to politics (Wagner, Gainous and Marlowe 2013). It might matter less if the various uses were randomly assigned, but they are measurably distinct across gender lines. For example, while Twitter has a marginally higher use by women than men, in the aggregate the nature of the usage differs (Abraham, et. al. 2010). Men tend to post their own tweets or engage in political exchanges than women. This is a pattern across multiple social media platforms. Studies have found that men are more likely to use the Internet for gaming, news and multimedia, while women more likely to engage socially, send email and participate in online commerce (Boneva et. al. 2001; Chen and Wellman 2003; Abraham, et. al. 2010; Drabowicz 2014; Intel Corporation 2012). As a result, gender and group differences in the nature of the online usage make the benefits of building political capital online uneven (Gainous Marlowe, and Wagner 2013, Gainous and Wagner 2014).

If men are exchanging more political content, than the impact of the internet will favor men over even those women who are online. Rather than creating a benefit for all users, the advent of online social networking may exacerbate traditional gender cleavages in political participation because the social capital built by using these sites is not qualitatively equal across the gender divide. More directly, women face some significant challenges in using the internet to maximize their impact on the political system. Women are less likely to get online, and they use social media less often and for more social than political functions. In areas with a significant gender gap in access and usage, we expect women will be less likely to benefit from online opportunities.

The digital divide may further disadvantage the developing states due to the late-adoption effect that reinforce socio-economic divisions, which may undermine the democratic potential of the internet and exacerbate the digital divide (Min 2010; Hilbert 2011; Rogers 2003; Gainous and Wagner 2011). As the internet becomes more widespread and as new political opportunities available online increase, including e-government and new social movements, the importance of internet skills and political interest will become even more significant (Min 2010). However, we note that being slower to a technology does not mean that women will not take advantage at some point in time. In truth, considering the opportunities and the relatively low cost, there is great motivation for women and other groups to move to move online (Hilbert 2011). Given the growing ubiquity of ICTs, especially in relation to politics through access to political information and e-government, we expect some of the benefits accruing to men to dissipate with time. Ultimately, should the context change, the internet should have an equalizing for gender equity, descriptive representation, political engagement and participation.

**Data and Measurement**

The data for this study come from two sources: 1) the 2010 Latino Barometer, and 2) The United Nations Gender Inequality Index. The 2010 Latino Barometer consists surveys of 22,687 respondents in 18 Latin American countries with sample sizes ranging from 1000 to 1204.[[1]](#footnote-1) The following countries are included: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela). These public opinion data were merged with the United Nations data creating a nested data set where each respondent from each country, respectively, was assigned a non-unique value ranking gender equality in their country (see http://hdr.undp.org/en/content/gender-inequality-index-gii for a description of the index).[[2]](#footnote-2) We rely on multilevel modeling to address the nesting and assess effects at both the individual and aggregate level. Our basic strategy is to estimate three multilevel models of Internet use (general, social media, and political information gathering) across countries, interpret the individual level fixed effects (gender and controls),[[3]](#footnote-3) and then examine the pattern in aggregate random effects by classifying the respective model intercepts according to whether a country has more or less gender equality. If men are more likely to use the Internet than women, then the fixed effects for our gender measure will be significant and in the right direction. If Internet use is higher in those countries where gender equality is greater, the average of the model intercepts for countries with more gender equality will be higher than those with less gender equality.

 General Internet use was measured using a simple question centered on the frequency with which respondents used the Internet: Have you ever used email or connected to the Internet? (never, rarely, occasionally, every day). We rescaled this item, as we did all others, to range from 0-1. This variable is continuous post imputation permitting us to rely on the multivariate normal distribution when estimating our random effects model. Our measure of social media use was based on the following nine items: Do you use any of these social networking services? (Facebook, MySpace, Youtube, Orkut, Twitter, Hi5, Windows Live Space, Sonico, Friendster). Each one was a separate item coded as 1 if respondents said they had used each respective site and 0 if they had not. We then summed all 9 items (α = 0.74).[[4]](#footnote-4) Finally, political information gathering was measured with the following item: How many days did you view political news on the Internet? This variable was also continuous post imputation.

**Analysis**

 Before moving on to the multivariate analysis, it is important to take a look at the distribution of the United Nations estimate of gender equality across Latin American nations. If we expect that there is variance in Internet use across nations with varying degrees of gender equality (Internet use should be higher in those nations with more equality), then we must first show that there is actually cross-national variation in gender equality. The results presented in Figure 1 suggest that this is the case. The variation is not tremendous, but it is there. The mean score is approximately 0.57 with a standard deviation of 0.05, so the distribution is not overly dispersed. It does appear to be relatively normal with a slight tilt toward less gender equality (11 of the 18 nations fall below the mean). Costa Rica has the most gender equality according to the index and Guatemala has the least. The Dominican Republic and Panama are also low while Argentina, Chile, Mexico, and Uruguay are high. The rest hover around the mean. Altogether there appears to be enough variation to test our hypotheses. In fact, because the variation is not tremendous, a significant result would suggest that the effect is quite substantial.

-Figure 1 here-

 Our first look at the relationship between gender and Internet use is largely descriptive as we perform t-tests (without controls) to determine if there is a bivariate relationship between gender and each of Internet use outcomes. This also gives us an opportunity to consider some characteristics of these dependent variables. We find the mean difference between men and women is significant on all three measures of Internet use. Men tend to use the Internet generally more frequently, they also tend to use more social media, and finally, they are more likely to gather political information via the Internet. That said, these differences do not appear, at first glance, to be substantively large. Notice though that the standard deviations are low relative to the means on the measures of general Internet use and political information gathering measure. This indicates that the dispersion is not great. Hence, even a small actual difference is a meaningful one when considering the context of the data. This is especially true given that the sample size is massive. This means that we can be very confident that the observed difference generalizes to the population. On the other hand, the means are small relative to the standard deviations on the social media use so the dispersion is greater. As this variable is essentially ordinal, while the others are continuous as a result of the imputation, a small mean difference suggests a clear difference on this index of usage for men and women. Altogether these bivariate estimates only provide an initial look. The controls for the digital divide that we add in the random effects models will substantially increase our confidence that this observed difference is not spurious.

-Table 1 here-

The interpretation of the fixed effects in our random effects models contained in Table 2 is straightforward. They are simply linear estimates, *ceteris paribus*. Every variable in all three models presented is significant. It is not surprising that the control variables, age and socio-economic status, are significant in all three models as the extant literature highlighted earlier has continuously demonstrated that younger people tend to use the Internet more frequently and those of lower SES are less likely to use the Internet. Our models indicate that this is the case in Latin America as well for general use, social media use, and political information gathering. Also not surprising is the fact that the model shows those who do not have regular access to the Internet are less likely to use it for any of these things. Importantly, the gender effect identified in Table 1 holds up when introducing controls. Similarly, the substantive effect does not appear large, especially relative to the other estimates, but it is nonetheless a significant difference. Also, there is no reason to believe that gender would matter more than traditional digital divide factors (age and SES), and certainly not access. The results suggest that gender still matters even when these factors are held constant.

-Table 2 here-

Finally, we look at the random intercepts portion of our multilevel models. This is, perhaps, the most interesting and revealing of our results. Before interpreting these random intercept models though, it is important to mention the results of the random effects ANOVA models we estimated prior to specifying these models. This allowed us to determine what portion of the variance in Internet use (on each respective measure) could be accounted for by cross-national differences (results available in the Online Appendix). Essentially, there would be no point in estimating the fully-specified random intercepts models if there is no cross-national variation in the first place. Consistent with the results in Table 1, the grand mean of each outcome fell between the mean of men and women at 0.46 for general Internet use, 0.04 for social media use, and 0.46 for political information gathering. The chi2 statistic from the likelihood ratio (LR) test was significant (p-value = 0.00) in each of the models. This means we can reject the null hypothesis, in each case, that there is no cross-national variation in these outcomes.[[5]](#footnote-5) The evidence suggests that the cross-national variation is considerable for each outcome. The intra-class correlation estimate (random intercept variance estimate/residual estimate) indicates that about 4 percent of the total variance in general Internet use, about 2 percent of the variance in social media use, and about 3 percent of the variance in political information gathering can be accounted for by the divergence across countries. This means that out of all the reasons that could explain differences in Internet use, these percentages can be accounted for solely by the country with which people reside. Nevertheless, these estimates do not tell us if this variation is due to varying levels of gender equality across these nations. For that, we can look back to the fully-specified random intercept model in Table 2.

The estimates of cross-national variation based on gender equality contained in Table 2 are classified in Table 3. This allows to test our primary hypothesis; that is that Internet use across all three outcomes is higher in countries with more gender equality. The results indicate that this is, without question, the case. The test here simply compares the random intercepts from nations below the mean on the gender equality index to the random intercepts from countries that are above the mean on the gender equality index. If we are correct, the intercepts should be higher in those countries with more gender equality. So, the results in Table 3 are quite stark and provide convincing evidence in support of our hypotheses. The random intercepts are statistically significantly higher on all three outcomes for the estimates from countries with more gender equality. First, when it comes to frequency of use 85 percent of the intercepts fell above the mean (that is the mean intercept) among countries with more gender equality while only 28 percent fell above the mean (again, the mean intercept) among countries with less gender equality (p = 0.00). Thus, Internet use was generally lower in countries with less gender equality. The same is true for social media use. Roughly 68 percent of the intercepts fell above the mean among countries with more gender equality compared to only 47 percent among countries with less gender equality (p = 0.00). Finally, the results concerning political information gathering via the Internet are more of the same. Approximately 56 percent of the intercepts fell above the mean in those countries with more gender equality, while this case for only 18 percent in those countries below the mean on the gender equality index.

**Conclusion**

The results presented here are clear. Gender matters when it comes to explaining Internet use in Latin America. First, our results indicate, at the individual level that men tend to use the Internet more frequently than women. This difference extends to social media use and political information gathering. Second, our results suggest that these differences are also present cross-nationally. Countries with more gender equality are more likely to use the Internet generally, for social media, and for political information gathering.

Both of these sets of results have implications for the debate on the equalizing versus normalizing effects of the Internet. At the individual level, if the Internet has the potential to equalize the power disparity across gender, this potential is diminished by the lower usage among females. As we highlighted earlier, the Internet can stimulate participation and activism through social capital and exposure to political information. If women are using the Internet less, this opportunity is dampened. The same can be said for gender equality across nations. Internet use is lower altogether in countries with less gender equality. This means that the potential for the Internet to serve as an equalizing force across gender, and generally for that matter, is stymied. The obstacle of the gender divide may be even greater in other regions that have lower incomes and higher levels of gender inequality.

We need to extend this research further. We do not address the many different types of information that men and women may be exposed to on the Internet here. More specific measures about whether they are reading or viewing news that is counter to the existing power structure or if they are simply consuming information that supports the status quo would allow us to determine if women are consuming more information that would, in fact, lead to attitudes and even behaviors that pursue equalization. We could also look at whether there are diverging effects of Internet use across gender. Does social media use encourage participation at diverging rates? Does it encourage participation towards different ends? There are many possibilities here. For, now we can say, that when it comes to Internet use in Latin America, gender does, indeed, matter.

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Internet Use and Gender Equality Random Effects ANOVA

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Estimate** | **SE** | **95% Confidence Intervals** |
|  | ***Frequency of Use*** |
| ***Fixed Effects*** |  |  |  |  |
| Constant | 0.46 | 0.01 | 0.44 | 0.47 |
| N = 20,204 |  |  |  |  |
| ***Random Effects/Country*** |  |  |
| Constant (s.d.) | 0.03 | 0.00 | 0.02 | 0.04 |
| Residual (s.d.) | 0.14 | 0.00 | 0.13 | 0.14 |
| Halved chi2 p-value = 0.00 |  |  |  |  |
|  | ***Social Media*** |
| ***Fixed Effects*** |  |  |  |  |
| Constant | 0.04 | 0.00 | 0.04 | 0.05 |
| N = 20,204 |  |  |  |  |
| ***Random Effects/Country*** |  |  |
| Constant (s.d.) | 0.01 | 0.00 | 0.01 | 0.01 |
| Residual (s.d.) | 0.06 | 0.00 | 0.06 | 0.07 |
| Halved chi2 p-value = 0.00 |  |  |  |  |
|  | ***Political Information Gathering*** |
| ***Fixed Effects*** |  |  |  |  |
| Constant | 0.46 | 0.01 | 0.45 | 0.47 |
| N = 20,204 |  |  |  |  |
| ***Random Effects/Country*** |  |  |
| Constant (s.d.) | 0.02 | 0.00 | 0.02 | 0.03 |
| Residual (s.d.) | 0.12 | 0.01 | 0.11 | 0.13 |
| Halved chi2 p-value = 0.00 |  |  |  |  |
| **Note:** Entries are maximum likelihood estimates with robust standard errors. |

Table 1: Differences in Internet Use across Gender

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Men** | **Women** |  |
|  | Mean | S.D. | Mean | S.D. | P-value |
| Frequency of Use | 0.467 | 0.14 | 0.450 | 0.14 | 0.00 |
| Social Media Use | 0.044 | 0.07 | 0.038 | 0.06 | 0.00 |
| Political Information Gathering | 0.472 | 0.13 | 0.457 | 0.12 | 0.00 |
|  |  |  |  |  |  |
| N = 20,204 |  |  |  |  |  |
| **Note:** The data come from the 2010 Latino Barometer. The p-value is derived from a two-tailed t-test.  |

Table 2: Random Intercepts Models on Internet Use

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Frequency** | **Social Media** | **Political** |
| ***Fixed Effects*** |  |  |  |
| Female | -0.01\*\* | -0.00\* | -0.01\*\* |
|  | (0.00) | (0.00) | (0.00) |
| Age | -0.15\*\* | -0.08\*\* | -0.05\*\* |
|  | (0.01) | (0.01) | (0.01) |
| SES | 0.20\*\* | 0.08\*\* | 0.11\*\* |
|  | (0.01) | (0.01) | (0.01) |
| Limited Access | -0.18\*\* | -0.06\*\* | -0.10\*\* |
|  | (0.01) | (0.00) | (0.01) |
|  |  |  |  |
| N = 20,204 |  |  |  |
| ***Random Effects/Gender Equality*** |
| Constant (s.d.) | 0.01\*\* | 0.01\*\* | 0.01\*\* |
|  | (0.00) | (0.00) | (0.00) |
| Halved chi2 p-value | 0.00 | 0.00 | 0.00 |
| **Note:** Table entries are multilevel maximum likelihood estimates with robust standard errors in parentheses. \*\* p<0.01, \* p<0.05.  |

Table 3: Variation in Random Intercepts across Gender Equality

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Frequency** | **Social Media** | **Political** |
|  | < μ Gender Equality | > μ Gender Equality | < μ Gender Equality | > μ Gender Equality | < μ Gender Equality | > μ Gender Equality |
| *Intercepts* |  |  |  |  |  |  |
| < μ  | 72 % | 15 % | 53 % | 32 % | 82 % | 44 % |
| > μ  | 28 % | 85 % | 47 % | 68 % | 18 % | 56 % |
| Χ2 p-value | 0.00 | 0.00 | 0.00 |
| **Note:** Table entries are percentages based on the average of the best linear unbiased predictions (BLUPs) of the random intercepts across each of the 5 imputed data sets for each of the respective models, μ = mean. The Χ2 p-value represents the probability that we cannot reject the null hypothesis of cell independence.  |

Figure 1: Gender Equality across Latin American Countries



1. While there were very few case missing, we decided to replace the missing values using a multiple imputation process to prevent potential bias in our estimates. All subsequent analyses are based on five replicate datasets, where the missing data in each replication were substituted with draws from the posterior distribution of the missing value conditional on observed values (Little and Rubin 1987; see also Horton and Lipsitz 2001). Our imputation model was based on a multivariate normal model including all indicators with missing values in the analyses to predict the missing values. [↑](#footnote-ref-1)
2. We inverted the Gender Inequality Index so the higher values represented more equality. [↑](#footnote-ref-2)
3. Our controls include standard digital divide indicators including age, socio-economic status (SES), and whether or not respondents had Internet access at home. Age was simply a continuous measure of years. SES was measured with a two-item index after inverting the first: 1) Does the salary you receive and your total family income allow you to cover your needs in a satisfactory manner? Which of the following statements describes your situation? (It’s sufficient and we can save, just sufficient and we don’t have major problems, It’s not sufficient and we have problems, not sufficient and we have major problems), 2) What level of education do you have? What was the last year you completed? (α = 0.46). Limited access was measured with one item: Where do you access the Internet (place of study/work, at home, at a private home, at a coffee place/paid place, at a free public access place)? Responses were coded as a 1 if they had to go to a coffee/paid place or to a free access place with the assumption that this reflects limited access. All other options were coded as 0. [↑](#footnote-ref-3)
4. There were no missing values on these items so they were not included in the imputation model. As a result, the index has eight response categories and could potentially be treated as ordinal. We estimated separate ordered logit regressions that mirrored the specification of our random effects model for each replicate imputed data set and performed a likelihood ratio test to determine if the parallel regressions assumption is violated. The assumption is violated in each model (p = 0.00). Thus, we treat this index as continuous and also rely on the multivariate normal distribution as opposed to the logit when estimating our random effects model of social media use. [↑](#footnote-ref-4)
5. The small p-value can be halved to obtain a less conservative test because we are testing a variance component. The alternative hypothesis is of necessity one-sided because negative variances, which would be allowed under a two-sided test, do not make sense (see Steenbergen 2012). [↑](#footnote-ref-5)