Mapping the Media in the Americas: A tool for exploring media and democracy

www.mediamap.info
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- The Canadian Foundation for the Americas
- The Carter Center
- Instituto de Prensa y Sociedad
- The University of Calgary
Given the important role of the media in democratic societies and the scarcity of basic information about this influential sector, The Carter Center, the Canadian Foundation for the Americas (FOCAL) and the University of Calgary developed the Mapping the Media in the Americas project. This initiative, launched in August 2004, aims to provide essential information to citizens of the hemisphere and promote transparency and understanding about the role and impact of the media in the democratic process.

This report presents the Mapping the Media in the Americas project and showcases the media maps of 12 countries from the hemisphere that resulted from this initiative. The first section of this report charts the evolution of the project, highlighting the process of map design and construction. The second section focuses on the maps themselves, outlining key map functionalities, specific applications for potential users and concrete examples of how this innovative tool can be used in research, policy making and advocacy. The ultimate objective of this initiative is to deepen our understanding of the media environment in the Americas, and in the process contribute to political reform and democratic consolidation in the Americas. It is hoped that the information contained in this report will enable a range of stakeholders to apply this innovative tool in moving towards this objective.

**MEDIA AND DEMOCRACY IN THE AMERICAS**

Today in the Western Hemisphere the media play an increasingly important role in transmitting information that citizens in a democratic society require to make informed decisions. Citizens receive information about candidates and election logistics, they are informed of public services and government policy, and they learn about current events in their community, country and the world, all from the media. The media determine what information is and is not available, and when and how it is conveyed; the media ultimately shape how people interpret and understand what is going on around them. What is more, people trust the media. The 2006 Latinobarómetro poll indicates that 64% of people placed trust in television, second only to the church and more than double the confidence registered for congress and political parties, with 27% and 22% respectively.

Ultimately, the media serve a public function that is indispensable for democracy. While this reality poses challenges to developed democracies, it is particularly significant in countries where weak governance structures and limited resources make it difficult to support and protect a balanced and diverse media sector. This task is all the more demanding given that the potential threats to freedom of expression and an independent press are complex and various. In some cases, the governments’ inability to support media from the national budget or to adopt and enforce regulations
governing media conduct leaves private money as the main source of media financing and the market as the regulator of the information that is circulated. In other cases partisan politics, electoral pressures and the pursuit of power can motivate government actors – responsible for regulating media to protect the public good – to make questionable decisions that can potentially challenge the ability of the media to play its crucial role of informing citizens, providing accountability and fostering informed debate and discussion. Decisions about how and to whom media concessions are granted, which mergers are approved and how government advertising dollars are distributed all shape the media landscape and are significant for media owners, citizens and politicians alike.

Creating an environment that promotes and enables the media to fulfil the functions required of them by a democratic society is an ongoing process and one that is impossible without information and analysis about the media industry and its interactions with other social and political variables. However, despite this need, there continues to be an absence of accurate information about the media in many countries throughout the Americas. Little is publicly known about the ownership structure of the media, the impact of media messaging on the vote, or the effect of media concentration and the threats it poses (or does not) to the diversity of ideas, freedom of expression and access to information. Without an increase in transparency and access to reliable data about our information sources, uninformed decision-making will continue, unchecked by citizens in a position to undertake an educated evaluation of the information they receive.

Creating Web-Based Media Maps

Between August 2004 and July 2007, the Mapping the Media in the Americas project created 12 web-based media maps using an innovative application of Geographic Information Systems (GIS). The maps display the location, coverage and ownership structure of the media (TV, radio, cable and print media), complementing this information with electoral results and socio-demographic information. Cutting edge software was used to convert normally static maps into web-accessible, interactive maps which bring together previously unconnected, and often not public, databases of media, electoral and socio-demographic information to make them available for use by the public. While the data contained in the maps must continually be improved and expanded, they represent an important advance for transparency and access to information in Latin America. The following section outlines the main milestones in the map construction process.

Selecting Countries to Map

Argentina, Brazil, Canada, Chile, Colombia, Costa Rica, Dominican Republic, Guatemala, Mexico, Peru, Trinidad and Tobago and Uruguay were the countries selected to be mapped. The countries were selected based on the following criteria:

- The level of GIS use and the availability of GIS-compatible data in a country.
- Geographic representation of the five hemispheric sub-regions.
- The existence of domestic contacts to facilitate data collection and map development.
Selecting Variables to Map

While there are a number of new media formats operating in the region (i.e. electronic publications and satellite TV), the traditional media formats (TV, cable TV, AM and FM radio and newspapers) were selected to be mapped due to their ongoing importance as key information sources for the majority of citizens, as well as data accessibility considerations. Given that the main objective of the Mapping the Media project is to increase transparency about the media and their operations, data on the following variables in the three categories were collected and mapped:

- **Physical location and identifiers of media outlets**: Location of media/broadcast outlet (XY coordinates or the municipality where they operate), call sign, frequency and station name.
- **Ownership structure of media sector**: Concession or license holder of individual media outlets and affiliation of individual media outlet with a media group or network.
- **Coverage of media outlets**: Jurisdiction of broadcast license, height of broadcast antenna and power of the signal and circulation figures for press.
To contextualize the media data, the maps also present electoral and socio-demographic information about the communities within which media operate. The following information is featured on the maps, useful when investigating links between media and democratic processes:

- **Electoral data:** Presidential/federal election results, eligible voters, registered voters and electoral participation rates for the most recent elections.
- **Socio-demographic data:** Population density, education, literacy, income levels and indigenous populations/languages.

Finally, one of the original project objectives was to highlight the issue of political finance and include data on political party campaign spending, given the large expenditures on media advertising during elections and the assumed impact of this advertising on the vote. Political party spending data exists and is displayed on the Canada map. While partial data is accessible in some countries, this information was not obtained in GIS-friendly format for the other 11 countries. It is hoped that additional political finance data will become publicly available and can be added to the maps in the future.

**Using Geographic Information Systems**

In order to organize, store and disseminate these disparate datasets of media, electoral and demographic information from 12 countries, the project harnessed the power of GIS technology. GIS is a system of mapping software that integrates the collection, management and analysis of geographic data. When using GIS, data is pulled from underlying databases (in Excel or Access) and transformed into images (maps) by linking data to geographic coordinates. One or more databases can be projected onto the same map, allowing users to visualize possible relationships and patterns within the datasets, while providing context for mapped variables.

The first step in constructing GIS maps depends on acquiring spatial data: the “base map” of a country to which datasets are connected and visualized. Spatial data provides the geographical boundaries and sub-divisions of a national territory (i.e. province and municipality), and determines the level of detail that can be displayed on the maps. Base maps for all counties in Latin America were acquired from the Centro Internacional de Agricultura Tropical (CIAT); however, recent changes to electoral or administrative boundaries required updates to spatial data in some cases. The current spatial data used in the media maps break down national territory to the municipal level, which often correspond to electoral districts.
Figure #2 – GIS data integration

Figure #3 – Latin America and the Caribbean spatial data provided by CIAT (International Center for Tropical Agriculture)
Collecting Data to Map

With the base map in place, media, census and electoral data were collected and organized in GIS-compatible databases, a process which assigns each database field a geographical reference (i.e. XY coordinate, city and province) that links the variables to a physical location on the base map. The media map databases are often very large and have been created from a variety of sources, including reports, statistics, archival and multimedia data. Wherever possible, official government data has been used. Due to the diversity of the information gathered and varying domestic contexts, a unique combination of data collection approaches was required in each country. Data collection strategies included:

- **In-Country Visits:** Data-gathering trips by the project team allowed for the identification of data sources and information sharing with governments, some which have begun the time-consuming process of generating GIS-compatible databases.
- **Contracting Media Experts:** National experts acquainted with the media sector in their countries were contracted to generate media databases.
- **Internet Searches:** Thanks to an increasing focus on transparency and connectivity among regional governments some data was located on the Internet, particularly electoral results and census data.

Collecting diverse GIS-compatible data in 12 countries to produce the media maps did present some challenges. GIS technology is slowly being incorporated by government and non-government bodies as a tool for the management, display and analysis of information; however, while some governments in the region are advanced in their use of the technology, in general GIS use in the Americas is uneven. As a result, GIS infrastructure, capacity and data are also irregular. In many cases datasets have not been geo-referenced (identified by XY coordinates), nor are they available in electronic format. Thus, many of the maps were created using lists of raw data which required substantial processing and reconfiguration.

Access to information also proved challenging. In recent years many countries of the region have placed a welcome emphasis on transparency. While this trend was visible in carrying out the mapping work – from the amount of valuable information available to the public on the Internet, to the willingness of many government officials to share information – there remain significant barriers to accessing useful, informative and up-to-date information in a user-friendly format in the region. In some cases the obstacles are caused by information management issues related to the capture, storage and display of data (digitalization, systematization, formatting, etc.). In other cases the challenges are caused by weak legal frameworks and the lack of a culture of openness that results in less government collection and/or disclosure of pertinent information required for this project.

Given the diversity of sources and methods of data collection, irregular access to information and uneven record keeping and data management systems across the Americas, the datasets vary between countries in terms of the quality and quantity of information they contain. The metadata is available on the map homepage and provides information about data sources.
THE FINAL PRODUCT:
THE BENEFITS OF INTERACTIVE MEDIA MAPS

The result of this process is 12 interactive media maps that visually illustrate the connections between media, elections and demographics, available for public use at www.mediamap.info.

Applying this ‘geo-demographic’ analysis of populations by place has provided several advantages for the Mapping the Media in the Americas project.

- It allows for the integration of independent and disparate datasets (census, election and media).
- It provides for visual and spatial presentation of the data and relationships that exist.
- It allows for exploratory and confirmatory spatial analysis.

Using the interactive website, users can explore how particular phenomena relate to each other as the maps layer and juxtapose information, helping citizens see the correlations between media distribution, wealth, electoral participation and voting outcomes. It is this ability to visualize connections and relationships that gives GIS its power and makes it such a useful tool.

Figure #4 – Diversity of data collected for map display
In addition to the research and analysis applications, the GIS-based media maps are also a flexible information storage and management system that can be continually updated, integrating new data or additional variables as information is created or collected. Regular updates of the data will help to ensure the accuracy and timeliness of the information displayed. Additionally, given GIS’ ability to integrate large amounts of data, new data can be added without replacing the existing datasets, providing historical records that are useful for time series analysis and tracking changes over time.

The maps are an evolving tool that will continue to be enriched with new data in collaboration with experts and local organizations in Latin America. If you or your organization would like to help update the maps, contribute new datasets or documents, please contact us at mediamap@focal.ca.
Mapping the Media in the Americas is a go-to resource for information and research on media and democracy. A free, not-for-profit and non-partisan source of information that utilizes cutting edge GIS applications, the Mapping the Media website represents an invaluable tool for social science research and education and is a powerful instrument to promote change in policy and practice. The maps can benefit a host of users, from media professionals, political parties, scholars, non-governmental organizations and government officials involved in the design and implementation of telecommunications policy, all of whom can use the maps to inform their work and effect change. This section provides an overview of some of the basic functions that the maps offer, outlining possible applications for a range of users.

FUNCTIONS OF THE MEDIA MAPS

The GIS maps feature a variety of functions that can help support research and analysis. Once a dataset has been selected as a map layer, toolbar options enable users to investigate and manipulate the data in a number of ways. The following are some of the particularly useful functions.

Downloading Datasets

The ability to download data from the web site is of paramount importance for undertaking statistical and spatial analyses. Via the Mapping the Media website, users can access the media, electoral and socio-demographic databases that feed the maps. Using the Download Tool indicated in Figure 5, selected datasets can be easily downloaded and exported in Excel format for further analysis.

Querying Datasets

The functionality of the media maps enables users to identify all records in a dataset that share a specific variable. Using the Inquiry Tool (Figure 6), users can query a selected Mapping the Media dataset about a specific variable. The results of this search are then displayed on the map and all relevant records are presented in tabular form (Figure 6). By searching all records for TV stations with national coverage in the Dominican Republic, a map is produced that displays which outlets are owned by the same person/group (indicated by a yellow dot). Such a search can be carried out for all datasets and variables included on the Mapping the Media website.
Figure #5 – Mexico presidential election results and download data function

Figure #6 – Query function: TV ownership in the Dominican Republic
Layering Datasets

Displaying visual representations of the political, demographic and media datasets assists users in generating ideas and hypotheses about the data, and can reveal patterns that are easily concealed in documents, charts, or spreadsheets; this is particularly true when one is able to visualize more than one dataset at the same time. Figure 7 displays Canada’s 2004 election results by electoral district. The image on the left shows the results in ‘block’ colour, while the image on the right displays the same data in ‘hatched’ format, an option that allows users to layer information and see two datasets at once. Users, therefore, are able to effectively analyze collected data.

In addition to electoral results, the Canada map also includes political finance data, displaying the spending by all political parties in the 2004 election, disaggregated by media advertising expenses and electoral districts. Figure 8 highlights an example of two layered datasets; political finance spending appears in ‘block’ colour format, and the ‘hatched’ election results are superimposed over top. By relating the electoral campaign finance datasets, users visualize spending and voting patterns while investigating possible relationships between spending on media advertising and electoral outcomes.

Each database provides a different perspective or orientation useful for specific questions, however no single database suits all purposes; often, combining or linking two or more databases is required for a more complex analysis.

Figure #7 – Map Layers for Crossing Data
Taking Screenshots of Maps

The ability to take screenshots of the maps makes them a useful tool not only for online reference, but also allows the images to be captured and included in other formats and products – for example, in publications, power point presentations and educational materials. Figure 9 demonstrates the quick and simple process of capturing an image generated on the Mapping the Media website using the “Print Screen” function on a standard key board and Paint, a simple picture editing program that usually comes in Windows.
POTENTIAL APPLICATIONS

[Location Searching]

Analysis concerning location can be utilized effectively within the Mapping the Media site. For example, media owners can locate all media outlets currently operating in a country or specific territory. Crossing media location with population density, language, income or literacy levels will also inform users about the social and economic needs of the population in different locations. With this information they can plan the strategic location of their own media outlets, identifying where media coverage is currently limited, as well as determining where their competitors are operating. Figure 10 shows the location of AM and FM radio antennas in Trinidad and Tobago, superimposed on population density figures. Therefore, a media owner considering opening a new outlet would be interested to know the size of the potential audience in different areas of the country.

![Figure 10 – Location of radio antenna in Trinidad and Tobago](image)

The Mapping the Media in the Americas website and country-wide media databases – listing basic contact information, antennae height and power, broadcast reach and frequency – can be used to further investigate these questions. This information is now available at the click of a mouse.
Frequently a user wants to discover whether mapped data will meet certain conditions or criteria; for example, a new political party would like to know where to focus its advertising campaign and what media network(s) it should work with to ensure that its campaign platform is reaching potential supporters. If the political party wants to focus its campaign on a certain demographic, using the census data (language, income and literacy) included in the Mapping the Media site, they can uncover important demographic patterns within a particular constituency. For example, a political party wants to target indigenous Quechua speakers as a possible base of support in an upcoming election. Figure 11 displays the results of recent Peruvian census data on maternal language, clearly demonstrating that the Cusco region of Peru is home to a large percentage of Quechua speakers (over 75% of population in most municipalities). With the target audience established, the party then considers the most effective way to communicate their electoral platform and contemplates TV advertisements. A quick search of the media data reveals that large pockets of their target region are not served by TV and that the major TV group that claims national coverage with which they have been negotiating advertising time (outlets highlighted by yellow dots in Figure 11) have no TV outlets within broadcast range of their target audience. Therefore, mapped data show the political party would be better off investing their campaign resources elsewhere, perhaps in community radio programming.

Figure #11 – Criteria Search: querying maternal language and TV coverage in Peru
Time series data provide historical context of current events, providing insight and understanding not available when working with data from a single point in time. By storing time series datasets, maps of the same phenomena can be generated at different points in time, useful in performing temporal analyses. For example, Figure 12 displays maps of 2001 and 2006 Peruvian electoral results. The relationship between the two images in Figure 12 is confirmed by Martin Tanaka (2006). He observes that the results of the second round elections in 2001 and 2006 are very similar revealing historical fractures, changes and continuities producing virtual mirror images (http://weblogs.elearning.ubs.ca/peru/archives1028136.php).

With the vast information sources available today, GIS is a useful tool in sorting information and identifying patterns one may not see without a map, helping to see if two or more variables vary similarly in a specific location. Once identified, a visual image of the possible connections between two variables can be powerful. For example, while the social and educational disadvantages of indigenous populations throughout the hemisphere are widely known and documented, the images in Figure 13 clearly demonstrate similar patterns in the distribution of indigenous populations (displayed on the right), and areas with high levels of illiteracy (displayed on the left). While this connection is not surprising, GIS applications allow for the display of these patterns in a way that a static datasheet cannot.
POSSIBLE USERS

The media maps are a flexible resource that can complement and support the work of a wider range of possible users. Depending on their goals and objectives, users can apply a combination of the functions and applications outlined above, tailoring the images and analysis generated using the Mapping the Media site to suit their needs.

Civil Society Organizations

Civil society organizations (CSO) that work on issues related to media, elections and democracy will find mapping information useful. Consider an organization working to promote literacy through educational programming. By exploring the socio-demographic characteristics (literacy, language, etc.) available on the maps, regions with high illiteracy rates can be identified. For example, the circled region in Figure 14 has one of the highest illiteracy rates in Costa Rica, indicating that further programming should be undertaken in this area. A quick overlay of existing broadcast media (TV, cable and radio) indicates that no outlets currently operate in that region, meaning that media outreach would not be a possibility. Based on this information a CSO would have to focus it efforts on alternative communication strategies because of the lack of media outlets in this area.
**Scholars and Researchers**

Scholars, researchers and students can use the media maps to conduct studies on a range of issues related to media, democracy and elections; for example, they can explore the impact of advertising of voting patterns or the effects of campaign finances laws on media advertising. Access to downloadable data, comparability between countries, storage of time series information and the ability to cross and visualize variables are all valuable resources in research and analysis. The visual images produced by the maps can also be incorporated into educational materials for explanatory and teaching purposes. Additionally, the website is a source of reports, analysis and links to relevant national laws and regulations, civil society organizations, media outlets and scholars, which have been added to each map’s web page as a textual complement to the maps themselves.

**Government Regulators and Policymakers**

Media regulators and policymakers can use the maps to evaluate the current media operations landscape. The combination of geographical, statistical and quantitative information can help telecommunications experts assess the performance of national regulatory frameworks, make decisions about the allocation of telecommunication licenses, inform policy development to ensure fairness in access to the media and prevent undue influence by a single actor. Figure 15 demonstrates that while much of Brazil is saturated with AM/FM radio stations, there are large parts of territories in the north of the country who currently do not have access to AM/FM radio.
Political Parties

Several of the examples provided in the functions and applications sections demonstrate specific ways the maps can be utilized by political parties. The Mapping the Media site can help parties identify possible bases of support, considering population demographics, past voting habits, as well as areas where electoral participation has historically been low. Once identified, the maps can help parties with the design of effective outreach strategies and messaging. Using the maps, the parties can evaluate the types of media and their reach in certain areas, allowing them to put together a communications plan without contracting expensive consultants.

Additionally, a political party could use the maps to:

- Locate regions of the country that may be interested in their platform and message.
- Identify areas of the country where voter registration and/or turn out have been low, indicating a potential pool of supporters.
- Select a media group or network that broadcasts to their core constituents.
- Promote party transparency by disclosing the details of their spending habits during campaigns for inclusion in the media maps.
THE PARTNERS

The Mapping the Media in the Americas project is a collaborative initiative that takes advantage of the complementary core capacities and skill sets of each of the partner organizations.

The Canadian Foundation for the Americas (FOCAL) – www.focal.ca
FOCAL is an independent, non-governmental organization based in Ottawa, Canada dedicated to deepening and strengthening Canada’s relations in Latin America through policy discussion and analysis. Please contact us at mediamap@focal.ca.

The Carter Center – www.cartercenter.org
Founded by Jimmy and Rosalynn Carter in 1982, The Carter Center, is a not-for-profit, nonpartisan, non-governmental organization dedicated to preventing and resolving conflicts, promoting sustainable development and human rights, enhancing freedom and democracy, and improving health. The Carter Center was part of the project team from August 2004 to July 2007 and remains enthusiastic about the initiative.

Instituto Prensa y Sociedad (IPYS) – www.ipys.org
IPYS is based in Lima, Peru. IPYS fosters debate around the role of the media, monitors press freedom and access to information in Latin America and supports investigative journalism. IPYS joined the project team in August 2007.

The University of Calgary – www.larc.ucalgary.ca
Located in Calgary, Canada, the Latin American Research Center at the University of Calgary brings together university researchers from diverse disciplines and faculties to collaborate on research relevant to the academic, business, government and global communities, including public policy research. Please contact us at mediamap@ucalgary.ca
The Mapping the Media in the Americas also works closely with organizations in Argentina, Guatemala, Mexico and Peru, who are now independently managing the media maps of their countries. These partners include FLACSO Guatemala, Fundación Prensa y Democracia México, Pontifica Universidad Católica del Perú, Universidad Nacional Autónoma de México, Universidad Nacional de General Sarmiento (Argentina), Universidad Nacional de Quilmes (Argentina), Universidad del Valle de Guatemala. Please see the project site (www.mediamap.info) for more information on how to contact these organizations.

Additionally, reports, analyses and links to national laws and regulations pertaining to media, elections and political finance, and lists of media, journalists and other civil society organizations have also been added to each map’s web page as a textual complement to the maps themselves.