Metropolitan comparative studies



Metropolitan policies to foster digital inclusion





Authors

Metropolis: Oscar Chamat-Nuñez and Silvia Llorente Sánchez.

Cities Coalition for Digital Rights: Paula Boet.

Anteverti: Ana Alcantud and Albert Tapia.

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Foreword by Metropolis

We started to draft our current Strategic Action Plan 2021-2023 (Active listening to transform our metropolitan spaces) in a context of great uncertainty regarding the development and consequences of the Covid-19 pandemic. Our planning process lasted about a year, and during that time fundamental questions began to emerge about what the metropolis would be like after the pandemic and how it would change the way people relate to each other in public space. Metropolis' response to these questions was to establish four challenges that we would work on during the period of this action plan: digital disruption, public legitimacy, urban growth, and multidimensional resilience.

Today, when in many —although unfortunately not all—countries of the world the pandemic shows signs of being under control, we are pleased to see that one of the challenges we proposed in the action plan turns out to be one of the elements where local and regional governments have focused their efforts to respond to the urgent needs of their population: digital disruption.

The pandemic confronted us with the issues that metropolitan areas and cities needed to address in order to achieve a successful digital transition: new forms of governance, management and delivery of public services, citizens' access to public administration, remote working, access to education, and the digital divide relating to gender and to elderly people.

Since 2021, we have been carrying out projects we have worked on in this area to answer the questions and concerns raised by our membership about the consequences of digitisation on the governance of metropolitan spaces and its impact on people's quality of life.

The document you are reading is the result of Metropolis' work with the Cities Coalition for Digital Rights, and the support of the Barcelona City Council. In this document we propose some tools and recommendations to help provide metropolises with a framework where people can exercise their digital rights and governments can foster the digital inclusion. It also proposes pathways for the opportunities that digitisation offers to truly become an instrument for making public decision-making better and more effective, which should ultimately result in an improved quality of life for those who live in these territories.

The importance of developing public policies by focusing on people's needs, their educational capacity and the real possibilities of benefiting from those policies is highlighted throughout the entire document.

A recurring idea emerged in the workshops and interviews carried out so this document could be drawn up: digitisation, in its broadest sense, is being carried out by replicating the same biases and mistakes that we can now identify in the way public spaces in our metropolises were constructed. In other words, we are talking about spaces that do not always take into account a perspective of inclusion; these are spaces where production is the main criterion—not care—, where the possibility of accessing and benefiting from the spaces is often conditioned by socio-economic variables, which do not respond to people's real needs.

This document therefore aims to contribute to the construction of digital spaces based on the lessons learned from the pandemic in terms of the design of public policies, but also, and significantly, in terms of the way in which metropolises have been built for many decades. We are sure that this publication will be used to build digital meeting spaces that are inclusive, safe, resilient and affordable.



Octavi de la Varga Metropolis Secretary General

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Methodology

This document is the result of collecting and analysing information on how local governments are implementing policies, programs and strategies to reduce the digital divide and foster digital inclusion.

To do so, eight metropolises have been selected based on the following criteria: geographic location, and membership to Metropolis and/ or in the Cities Coalition for Digital Rights. The cities under the research are (in alphabetic order): Barcelona (Spain, Europe), Bordeaux (France, Europe), Buenos Aires (Argentina, Latin America), Johannesburg (South Africa, Africa), Montréal (Canada, North America), New York (United States, North America), São Paulo (Brazil, Latin America), and Sydney (Australia, Asia).

The methodology includes a qualitative and quantitative approach, and desktop research. Qualitative and strategical information has been collected in eight interviews during two months (October-November 2021), with city officials using a common semi-structured interview script to address three main topics: (a) digital infrastructure, (b) digital literacy and (c) the digital gender gap. The information collected from each city can be found at the end of the document in the section factsheets.

The interviews and desk research were complemented with three in-depth workshops with four cities (Barcelona, Buenos Aires, Montréal, and New York). Each workshop covered one of the topics of this study.

Current context

During the physical distancing period required by the Covid-19 pandemic, local and regional governments (LRGs) opted to speed up the digitisation of public services¹ as a response to the urgent need to continue delivering essential services such as education, healthcare advice and information related to the pandemic. This acceleration maintained existing social and economic inequalities, and highlighted the deep digital divide. Socioeconomically vulnerable groups who experience unstable, unaffordable and/or sporadic access to digital infrastructure are the most affected by the digitisation of public services. Those groups often do not have sufficient digital literacy to take advantage of the digitals tools that could provide them with access to basic civil rights such as employment, education or being part of participatory process. LRGs are implementing plans and policies to reverse this by providing digital infrastructure, connectivity, and digital literacy training courses tailored made for both those collectives and all the community.

However, those initiatives from LRGs do not always consider women and girls when designing digital policies,² and gender-oriented digital policies or data-gathering strategies with an inclusive approach are not commonly implemented by LRGs.³ This situation is generating a digital experience for users that is similar to the one experienced in public spaces as they have been constructed so far.⁴ This gender-blind approach is creating unsafe digital environments for women and girls, and wasting the opportunity to create a real inclusive digital experience for all people, especially for women and girls, from the very beginning.

Despite the importance of this for the development of any territory, or despite the opportunities in terms of economies of scale offered by metropolitan governance, the coordination in the deployment of digital infrastructures and policies is still, generally speaking, at a preliminary stage of implementation. This situation could be partially explained not by a reluctance to cooperate between municipalities, but by the existing legal framework that leaves unclear the responsibility for designing feasible operational frameworks adapted to metropolitan specifics, needs and potential, and the possibility of achieving this.

- 1 Source: Emergency Governance Initiative, Metropolis, UCLG & LSE. <u>www.metropolis.org/sites/default/files/resources/Local-public-services-incrisis-mode_0.pdf</u>
- 2 There is a clear gender gap in digital literacy, particularly in urban areas. 45% of women reported not using the internet because they didn't know how to, compared with 36% of men. Source: http://webfoundation.org/docs/2020/10/Womens-Rights-Online-Report-1.pdf.
- 3 For example, as of October 2020, out of 183 countries, eight had data on Covid-19 testing (4%) broken down by gender, 126 by confirmed cases (69%), 21 by hospitalisations (11%), and 92 countries by deaths (48%). Source: Integrating gender data in health information systems, World Health Organization.
- 4 "Urban spaces are not the same for men and women. Women do not live them, nor do they feel them, nor do they enjoy them in the same way. The reason is gender inequalities that translate into a male public space, in which women, as well as vulnerable groups due to sex, ethnicity, disability or age, are excluded." <u>https://www.metropolis.org/sites/default/files/resources/Women-girls-public-spaces.pdf</u>

Main findings

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Accessing digital infrastructure

- Digital infrastructure is becoming crucial for accessing a substantial number of public and private services and opportunities. This became especially relevant during the lockdown generated by Covid-19, when residents only could access essential services (education or healthcare updates) digitally. During that time, accessing stable, reliable and fast broadband connections was no any longer a mere option, it was a basic current need LRGs should start to offer.
- LRGs are using highly diverse means of funding the deployment of digital infrastructure (services, connectivity, content, etc.), as well as the devices needed to use the infrastructure. Although it is clear there is no "onesize-fits-all" strategy to finance it, there is a clear consensus on the opportunity offered by the technology itself and the ecosystem of stakeholders to be as innovative as possible in order to design the most appropriate funding model for the city and its inhabitants.
- When designing the deployment of the digital infrastructure, it is critical to bear in mind that the aim of offering affordable, accessible and stable connections to improve people's quality of life inclusively, and with an added value experience for the user, should be at the centre of every decision.

Digital literacy

- Policymakers have to deal with the paradox that people easily share their data and use private stakeholder platforms, but at the same time they are reluctant to share the same data with public institutions that are looking out for the common good. This challenge is being mainly tackled by open-data strategies that facilitate the use of the data collected by the LRGs as a way of ensuring transparency and the possibility that the data used by the metropolises for the common good can also be used directly by the people for their own interests.
- Although digital literacy is the starting point for reducing the digital divide, it is critically important to design the interfaces of all public and digital services delivered by the government from an inclusive user-experience perspective, and not simply create a digitised version of the paper that has been used for the same purpose. It means, for example, automated form-filling using information already shared and authorised by the person, or incorporating elements for visually impaired that cannot be incorporated in the paper format. By bearing in mind the user experience of the digital infrastructure and taking courses to make it easier to use it, we can increase the possibility that digital literacy becomes a real gamechanger for people's quality of life.
- Until a minimum level of digital literacy has been achieved across the population, governments must continue offering the possibility of accessing digital services in in a traditional format (e.g., phone calls or in-person). If cities do not ensure that this hybrid traditional and digital service is offered for a certain period of time, the risk of creating a new gap or deepening a previous one increases.

Building bridges, reducing the digital divide

- The digital infrastructure and the increasing number of devices being used in the city and by the city itself are an important tool for gathering data useful for designing specific policies to reduce the digital divide. However, most of the time this data gathering is being carried out without considering all its potential in terms of guantity and detail. LRGs often do not consider, for example, the possibility of breaking down data by criteria such as gender or age, or designing databases that allow overlap with other categories in order to identify specific needs for women or girls. Thus, the data has become a tool for designing feasible, tailor-made, inclusive policies: however, there is still plenty of room for this to become reality.
- Technology allows LRGs to design digital content, services and policies, by defining the end user also as a woman and not only as a generic "consumer". If all the stakeholders concerned in the deployment of the digital infrastructure and related services took this opportunity, it could have an important impact on reducing the growing digital divide existing in our metropolitan areas.
- LRGs should adapt and implement a user-experience approach for the digitisation of their services to make them more accessible, so that this could have a broader impact and use. It means, for example, designing the interfaces needed to access any digital service keeping in mind elements such as accessibility, usability, the broadband needed or even the colours of the interface itself.

Deploying digital infrastructure

5 In this document, digital infrastructure refers to "the physical resources that are necessary to enable the use of data, computerised devices, methods, systems and processes". <u>https://www.designingbuildings.co.uk/wiki/Digital_infrastructure</u> (11 February 2022).

Digital infrastructure: from an option to a must-have

Between years 2000 and 2020, the world population using the internet has grown from 7% to 60%.⁶ This means that by the end of 2020, 4.7 billion people were using the internet. However, at territorial level, it is easy to find important differences between regions, countries and, lower down the scale, between urbanised and non-urbanised areas.

In the early 2000s, some local and regional governments (LRGs) rolled out public internet connections as a free service for city centres or, in some cases, as a paid-for service. Later on, around 2010, with the emerging concept of "smart cities", this strategy received considerable attention and investment by public, academic and private stakeholders.⁷ More recently, LRGs have placed special importance on the deployment of digital infrastructure and on using it as a way to offer part of some public services digitally, a trend that has been consolidated as a consequence of the Covid-19 pandemic.

Today, two decades later, the access to digital services for LRGs has changed from a oneway, top-down perspective (communicating information) to a more interactive one (sharing and building information collectively). It has also changed for the residents, who not only use the digital infrastructure for recreational purposes, but also for developing economic, educational, work-related activities or for communicating with the administrative structure of the city. For the cities interviewed, during the last 20 years access to digital infrastructures has become a resident's right, comparable to that to tap water or electricity supply.

During the last 20 years access to digital infrastructures has become a resident's right, comparable to that to tap water or electricity supply. All the interviewed cities agreed on the importance of a stable, accessible, affordable, and value-added internet connection, and also that by offering a digital infrastructure, cities have the potential to improve the quality of life for urban and metropolitan inhabitants. This is provided by the possibility of offering services and two-way communication channels between the government and the community.

The digitisation process has an important downside: although the increasing number of technological and digital possibilities, if some basic level of digital literacy is not ensured, it can also generate new forms of socio-economic exclusion or exacerbate existing ones. However, despite those risks, the digital infrastructure and its services have demonstrated that, while it has been designed as a tool for inclusion, it becomes a bridge to reduce inequalities, or at least avoid the creation of new ones.

Critical factors for successful digital infrastructure deployment

There is a common consensus across the cities interviewed regarding the importance of the deployment of digital infrastructure as a critical element in delivering public services. Factors were also identified that can enable or limit its deployment.

Infrastructure installation cost: The undergrounding of cabling and the installation of hotspots to provide coverage in public parks, streets, or facilities such as metro, buses, libraries, community centres, have an important cost for any administration. In some circumstances, this investment could be reduced by, for example, creating alliances between municipalities to share this cost, or by delegating coordination to existing supramunicipal entities, such as metropolitan areas.

Because of the characteristics (private stakeholders play an important role in this market) and cost of this infrastructure, a wide range of innovative and tailor-made models to finance this cost were found across regions and municipalities (see section 3.3 for more information).

⁶ World Bank, data.worldbank.org

⁷ The Digital Transformation of Metropolises; Issue Papers Collection, Metropolis (2019).

User experience added value: All cities interviewed agreed on the importance that LRGs should generate an added value every time a person uses the digital infrastructure. This can be translated into, for example, the reduction and monitoring of administrative procedures or the sharing of relevant information, as it already happened during the Covid-19 emergency. If LRGs do not design digital services and their infrastructure keeping this added value as a priority, all their effort will be at risk and used mainly for low-added-value activities (social media, streaming, etc).

Funding models for the deployment of digital infrastructure

Each of the cities interviewed has its own model for funding the deployment of digital infrastructure. Those models range from 100% public, intermediate public-private business models, and 100% private digital infrastructures and services.

The three main finance models for funding the deployment and maintenance of digital infrastructure are summarised below. They do not differ substantially from other funding models already used by LRGs. However, the characteristics of this service -- it is not a tangible asset like water or electricity, and private stakeholders must consolidate roles as market and technology developers- allow different models to be found in the same metropolises. For example, in some cities where digital infrastructure is funded 100% by the local/regional government, private companies offer free, open internet connections under specific conditions (time, speed, etc.) and restricted spaces (shopping centres, airports, touristic attractions, etc.).

For LRGs, it is important to be aware that the long-term investment that has been made by private stakeholders has granted them an essential role in the deployment of digital infrastructures in cities and regions. This makes Public Private Partnership (PPPs) a useful and feasible framework for the deployment of this kind of infrastructure. Nevertheless, LRGs must ensure and be aware of their central and leading role in the design and implementation of any agreement of this kind, keeping people's quality of life as a main, central priority.

Case 1: The public sector as a provider of public internet services

LRGs bear the total cost of digital infrastructure deployment and the connectivity service. Due to the importance of the investment needed to deploy digital infrastructure, LRGs need to have a healthy and long-term financial situation to ensure other services will not be affected.

Case 2: Infrastructure and internet services are provided through a publicprivate partnership (PPP)

The private sector bears the investment costs related to the deployment of the infrastructure for the installation of wi-fi equipment, which in return receives compensation for the operation of the service or payment for the installation of the public internet infrastructure by the municipality.

A clear, stable win-win situation is needed to conclude efficient forms of PPPs. Partners must understand each other, and the model must be conceptualised, targeted, and completed to maximise the value each sector can bring.

Case 3: The private sector provides free, open internet services

Public internet services provided by the private sector include restaurants, shopping malls, airports, and cinemas, usually incorporating internet services to complement their commercial range. These internet services are usually time and speed limited. The implication is that they cannot be considered a formal public service, although this infrastructure can be used to access other public services, such as tax payments.

Impact of regional and national regulations on infrastructure policies

The cities consulted in this research pointed out that, in their territories, central governments play an important role in regulating the management and/or the deployment of digital infrastructures. This situation has a direct impact on the deployment of digital infrastructures and their governance. As a solution to this situation, cities interviewed shared the need to use existing bodies, or create new ones, where public stakeholders from different levels of territory can identify, coordinate and foster tailor-made solutions for urban and rural spaces. There are two main regulatory frameworks that have an impact on the development of digital infrastructures at local level: data protection law, and market competition law.

Data protection law

The data protection law defines how the personal data collected using any kind of digital infrastructure or service (public or private) can or cannot be used or stored. As an example, the General Data Protection Regulation (GDPR) of the European Union defines the following five legal dimensions as the most useful for LRGs when defining data protection laws:⁸

- Personal data: Personal data is any information that relates to an individual who can be directly or indirectly identified.
- Data processing: Any action performed on data, whether automated or manual.
- Data subject: The person whose data is processed.
- Data controller: The person who decides why and how personal data will be processed.
- Data processor: A third party that processes personal data on behalf of a data controller.

The coordination between all those dimensions determines the regulatory framework that allows the emergence of elements critically important for the final user and their personal data. In order to do so, an appropriate, operative dialogue between private and public stakeholders should be defined so that shared strategies can be identified, such as how to promote data literacy among the population.

Market competion law

As mentioned above, due to the specific characteristics of digital infrastructures, private stakeholders play an important role as enablers of most public digital strategies. In order to align their objectives and needs with the public ones, a clear and adaptative legal framework should be established so that all the parties get their appropriate trade-off. It is critical to keep in mind that at the centre of every decision the aim should be to offer affordable, accessible, and stable internet connections to people. A clear definition of this framework should define at least (i) the service prices, (ii) who offers open wi-fi services, and (iii) the wi-fi service conditions. Even if the plans and powers of LRGs are aligned with the legal framework (data protection and market competition), this is not enough to reduce the digital divide and increase the quality of life of residents, especially groups that have historically been at risk of social exclusion. As a strategy to reduce the digital divide, LRGs should also implement strategies to promote digital literacy among inhabitants as well as public servants, the digitisation of internal city administration procedures, and the design of public digital services from a user experience perspective. The complex and always imperfect combination of all those elements is what can turn the deployment of digital infrastructures into an experience with added value for the people, and not just a connection used mainly for leisure.

City examples

The public sector as a provider of public internet services

Barcelona

In Spain, national regulations do not allow competition against internet broadband connection carriers.⁹ This means Barcelona cannot offer public wi-fi as a primary service, only as a secondary service to a different kind of primary public service, such as a cultural service in public facilities (libraries, sports venue or parks). In those spaces, the public wi-fi services (Barcelona WiFi)¹⁰ is offered with no restrictions in terms of data usage or time.

Buenos Aires

In Argentina, the companies providing telephone or internet services must allocate 1% of their net income to a trust fund (Fondo Fiduciario de Servicio Universal, FFSU) to bring connectivity to places without it. This body, FFSU, managed by the National Communications Authority (ENACOM), is financing the deployment of the city's open public wi-fi network: the BA wi-fi programme. The connection is for half an hour, which can be renewed indefinitely by re-accepting the terms and conditions.¹¹

⁸ https://gdpr.eu/what-is-gdpr/

⁹ https://www.boe.es/diario_boe/txt.php?id=BOE-A-2022-855

¹⁰ https://ajuntament.barcelona.cat/barcelonawifi/es/welcome.html

¹¹ https://www.buenosaires.gob.ar/innovacion/ciudadinteligente/proyectos/bawifi

Public-private partnership (PPP) for public internet services

Sao Paulo

The City Council is expanding its public wi-fi (Wi-fi livre SP12). The service is entirely free, and it does not involve a financial burden for the municipality. The service is provided through a public-private collaboration in which revenues come from publicity and advertisements shown to the service users when accessing it: a 30-second advertisement allows users to use the internet service for 30 minutes freely. At the end of this time, the user can repeat the process, watching a new advertisement to keep using the service. This public-private alliance for the deployment of open public wi-fi was possible only when the current legal framework clarified how personal data can be stored or used by any of the parties involved.

Johannesburg

All government buildings have free, open wi-fi, and residents can access the public network in public places like bus rapid transit stations, metro stations and railway stations. Through public-private cooperation, the city plans to expand its public internet services to mini-bus taxis.

While the city's public wi-fi is making progress, some issues have been raised as a consequence of the high price for private connectivity. In 2019, the South African Competition Commission released a market investigation that concluded data was expensive for an average income household, and that the pricing of the internet connection was not transparent. This put the low-income population at even more risk of social and digital exclusion. The Commission stated that the situation was partially a consequence of a lack of competition, which subsequently caused high prices.

In order to reverse that situation, the Commission made the following recommendations:¹³

- Immediate relief on data pricing.
- Promoting programmes to enhance pricebased competition in the mobile internet industry, as well as more strict regulatory scrutiny.
- Fostering programs to deploy digital infrastructure in order to provide digital services and open free public wi-fi in lower-income areas and smaller secondary cities.

The private sector as a provider of internet services (for public and household use)

New York City

New York is improving and expanding its internet infrastructure through a long-term plan to ensure connectivity access of its inhabitants and businesses. It is called the New York City Internet Master Plan.¹⁴ This plan prioritises the deployment of the internet network in those areas of the city that currently do not have reliable access to the internet. In addition, this plan allows to the city to define the service level at which carriers must deliver this service to the population. To do so, the city has opened a request for proposals which is open to public applications, so that any private vendor can apply. Through this mechanism, applicants must commit to a set of broadband principles, which are used, together with other indicators, to select the private broadband providers.

Some of those broadband principles include quality performance, affordability (fair prices for low-income families and other disadvantaged social strata), reliability (of the service), privacy (through data protection laws), fairness and freedom of choice (the freedom to choose and to change to another internet provider).

Private internet services in the public sphere

Sydney

Sydney does not have a municipal public wi-fi network in streets or other public spaces, but the city offers public free internet access in public libraries. The inhabitants can access free wi-fi services in privately-owned spaces for public use, such as shopping centres, cinemas, or restaurants.

¹⁴ https://www1.nyc.gov/assets/cto/downloads/internet-master-plan/NYC_IMP_1.7.20_FINAL-2.pdf

Digital literacy

Digital infrastructure is just one of the elements necessary to achieve the goal of bringing the benefits of digitalisation to people, so they can have a better and more sustainable quality of life. To achieve this goal, digital literacy appears as a critical element of successful digital inclusion policies. UNESCO defines digital literacy as "the ability to access, manage, understand, integrate, communicate, evaluate and create information safely and appropriately through digital devices and networked technologies for participation in economic and social life. It includes competences that are variously referred to as computer literacy, ICT literacy, information literacy, and media literacy".¹⁵

Although this definition could, at a first glance, be clear and useful for every metropolis, it should be considered that both competencies and levels of digital literacy depend to a large extent on the specific socio-economic contexts of each city or metropolis

The digitisation of public services

Local governments agree on the fact that the pandemic required a radical and rapid response from LRGs.¹⁶ This situation leads to the boosting of the administration's existing digitisation processes or the implementation of new ones with the aim of making it easier to access public services (e.g., medical appointments), as well as the delivery of new ones (e.g., culture, e-learning), and reducing the multidimensional impact of the lockdown and the subsequent recovery measures. Despite those efforts, the population's level of digital literacy remained as a barrier that prevented people from successfully accessing the public services digitised during the pandemic.

Governments interviewed also share a common understanding that digital channels represent an open window for strengthening a two-way conversation with their inhabitants. In order to make the most of this opportunity, governments also agreed on the need for long-term investment to achieve an appropriate level of digital literacy across the population.

The digitisation of public services brings up at least three challenges:

Measuring infrastructure use: To successfully digitise public services, the process must be carried out measuring not only the capacity of the digital infrastructure installed (speed, simultaneous connections, etc.) but also how it is being used by people. Very often, due to the lack of digital literacy level, this infrastructure has been used only for leisure purposes and not to access public services. Therefore, until a minimum level of digital literacy has been achieved across the population, governments must continue offering the option to access those services in a traditional format, or deploy personalised accompanying services while simultaneously implementing policies to upgrade the digital literacy level and increase their awareness of the possibility to access those services by digital means.

- Capacity building: Public servants must have the appropriate digital skills and be aware of the possibilities that digitisation offers to governments, so that this allows them to identify how far or how fast the level of digitisation of any public service can go. Public servants' digital skills are also needed for the municipality in the design and implementation of the appropriate tools, so that it is possible to continuously receive data, complaints or suggestions from residents.
- Data governance: The data management of all the information generated as a result of the digitisation of public services, and that generated and shared by the population using it, opens the door to one of the most complex challenges governments must face: the use and storage of this information. This challenge is not only technological, but it is also cultural. The trust LRGs have to build with the population becomes a long-term project that should be planned and implemented carefully. Policymakers have to deal with the paradox that users are open to sharing their personal information with private companies for commercial purposes, but they are reluctant to share the same information with public bodies for the collective benefit.

Adapting digital literacy programmes to the population

The cities and metropolises interviewed are implementing public digital literacy programmes at different levels and paces. All of them agree on the importance of focusing their efforts on the population most at risk of socio-economical exclusion. This part of the population consists of the people who can benefit the most from the opportunities that digitisation can bring to their

¹⁵ A Global Framework to Measure Digital Literacy, Manos Antoninis, Director of the Global Education Monitoring Report, and Silvia Montoya, Director of the UNESCO Institute for Statistics; UNESCO (2018).

¹⁶ Metropolis, UCLG and LSE-Cities (2021); Emergency Governance Initiative, Policy brief 2. <u>https://www.metropolis.org/</u> emergency-governance-initiative-cities-and-regions

everyday lives. For example, by being able to apply online for scholarships, users can reduce time and transport costs or eliminate queuing time.

Therefore, these types of courses should be designed to train people on appropriate digital tools, so that they can interact with them. In fact, they could range from knowing how to create and write an e-mail to explaining how to interact with the municipality in participatory processes. In the cities interviewed, these courses are mostly taught in person and are organised together with bodies such as NGOs or community associations. In order to have the greatest possible positive impact, the courses are offered in locations close to the places where the people who receive them live.

During the interviews, it was underlined the critical importance to design the interfaces of all public and digital services delivered by the government from a user-experience perspective, and not simply to create a digitised version of the paper form that has been used for the same purpose. This means, for example, automated form-filling using information already shared and authorised by the person, or incorporating elements for visually impaired people that cannot be incorporated in the paper format. By bearing in mind the user experience of the digital infrastructure and taking courses to make it easier to use it, we can increase the possibility that digital literacy becomes a real game-changer for people's quality of life

City examples

Barcelona

"Connectem Barcelona" is a pilot project launched in Barcelona to provide connectivity, offer targeted support to improve digital literacy and provide free laptops to 400 households living in Trinitat Nova. The project also aims to assess the impact of providing personalised support with regards to just offering devices and connectivity.

This project is part of the city's approach to a fair digital transition, which aims to achieve a zero digital divide. It has been made possible thanks to the cooperation of some 30 organisations, including companies, which have become involved in the project.¹⁷



New York

NY Connected Communities¹⁸ is a programme designed to expand the availability of public computer centres across the city, focusing specially on the city's poorest neighbourhoods. The program offers two main resources: digital literacy and employment support. The city delivers this service in parks and recreation centres, senior centres, libraries, the New York City Housing Authority (NYCHA), and the Department for the Aging.

This programme is part of a larger city strategy called Broadband Access Program that also includes:

- Harlem Wi-Fi Network: the largest continuous public outdoor wi-fi network in New York City.
- NYCHA Digital Van: Since 2012 cans travel around the city to provide community members with access to the internet for personal uses, such as searching for job opportunities, or touching up their CVs.

Sydney

Building on the skills development programmes already offered by the city in community centres and libraries, the city created an experimental learning programme to learn how to use digital tools (apps), developing digital media skills to produce audio and video content for digital storytelling, and digital skills such as coding, robotics, 3D printing and electronics.¹⁹

Montréal

The city offers digital literacy services and attention to residents through NGOs that usually work at a federal level through cooperation between public and social bodies. Children also learn coding: this is carried out by organisations that work with schools and the city council to promote advanced digital skills, specifically programming and coding.

17 https://ajuntament.barcelona.cat/digital/ca/apoderament-digital/inclusio-digital/connectem-barcelona

¹⁸ https://www1.nyc.gov

¹⁹ https://www.cityofsydney.nsw.gov.au/strategies-action-plans/digital-strategy

Building bridges, reducing the digital divide

Besides its positive impact in terms of collective wealth and the exchange of information and knowledge, any disruptive technology that emerges in our society also has the potential to increase already existing gender and socio-economic inequalities. This risk is especially high for groups that have historically been at constant risk of social exclusion, and therefore the situation requires special attention when designing public policies to govern the deployment of new technologies across the territory. In terms of digitisation, women, elderly people living alone, and school-age children seem to be the groups most in risk of being left behind with regards the opportunities brought by the digital technologies. This has been particularly dramatic during the lockdown generated by Covid-19, which has forced many people to, for example, rely on digital devices to report gender-based violence or access health services or their regular classes.

LRGs also mentioned that, in order to reduce the risk of further broadening the socio-economic digital divide, it is necessary to implement longterm policies that not only affect the deployment of the infrastructure, but are also tailor-made for the risk groups.

Gender-oriented policies

According to the World Wide Web Foundation²⁰, women are 1.6 times more likely than men to report lack of skills as a barrier to internet use. However, women's confidence in their digital abilities rises dramatically with increased education. Among those with little or no schooling, 40% of women and 33% of men say they "do not know how" to use the internet. This drops to 9% of men and 18% of women with secondary education, and only to 3% of men and 5% of women with tertiary education. In this sense, household economic status was also a significant factor, although less influential than education: one in three women from the lowest income group noted lack of skills as a barrier, compared to one in four among other women.

The impacts of digital exclusion are wide-ranging. Digital illiteracy and barriers in accessing mobile phones and the internet limit access to information and learning opportunities, and increase vulnerabilities. On the same note, lack of skills in using and creating technology affects employability and future career prospects.

Moreover, the risk of poverty and social exclusion is higher in single-parent families with a female head of household,²¹ and the longer life expectancy of women compared to men (especially in high-income countries) leads us to assume that a large proportion of older people are women.

In addition, in many countries the owners of telephone lines or internet contracts (when talking about couples or families) are mainly men. And, for example, in South Asia, women are 26% less likely to own a mobile phone than men.²² Not having a mobile phone of their own makes the use of the device conditional on the relationship with its owner. In this case, the patriarchal relationships in the physical world are being reproduced in the digital environment, and they can even restrict women's personal and professional development possibilities.

Although LRGs interviewed underlined the need to introduce a gender perspective into digital policies to improve their efficiency, the reality is that this is not a widespread practice.

In all cities interviewed the deployment of digital infrastructure is mainly based on available household income and/or digital infrastructure coverage, and not on specific characteristics of the household (e.g. single mothers, school background or family composition). One consequence of this approach is that the resulting digital policies have a weak or inexisting gender approach. With the aim to build inclusive digital policies, LRG's should implement strategies and policies to gather data easily disaggregated by, for example, gender or age.

Government representatives consulted also highlighted an aspect of reality: cities have been designed for men. Urban planning, the distribution and design of public places, and transportation systems are reflections of the residents' social norms. Thus, in a patriarchal context like the current one, cities are still hostile for women. Some of the local and regional authorities interviewed have pointed out the importance of gender perspective in the policymaking process.

During the lockdown generated because of the Covid-19 pandemic, gender-based violence has tripled in many countries. This violence is suffered by women and girls not only in terms of physical violence, but also in terms of online violence, such as physical threats, sexual harassment, exploitation, bullying, stalking and sex trolling.²³ Although some digital tools to prevent and report this kind of violence already existed, LRGs promoted their use and created new ones. According to UNICEF, those tools should incorporate, at least, the following approaches in their design:²⁴

²⁰ Women's Rights Online. Translating access into empowerment. Global report, October 2015. World Wide Web Foundation.

²¹ In most countries with data, single mothers with children in both developed and developing regions have higher poverty rates than single fathers, and much higher rates than families with two parents. https://unstats.un.org

²² The Digital Transformation of Metropolises; Issue Papers Collection, Metropolis (2019).

²³ https://blogs.unicef.org/east-asia-pacific/six-ways-tech-can-help-end-gender-based-violence/

- Preventive: Designed to raise awareness and mitigate a a user's risk of suffering violence, by, for example, crowdsourcing and mapping to provide safety information in public spaces.
- As a peer: To prevent risks of sextortion and online harassment, using interactive online characters that provide real advice and resources from experts and activists.
- Digital safe spaces: In emergency situations such as forced mass migration or war, digital tools can provide access to information and services in a way that is safe, culturally appropriate and accessible to users.
- Tech as a safeguard: The city services that interact with the population for example chatbots can incorporate keyword recognition of high risk-words (rape, hit, fear, etc.).

Education

Education was perhaps the sector where the process of digitisation was most clearly evident before the pandemic. Discussions on the use of digital infrastructure to deliver this basic right were under way. But it was not until the lockdown that the dramatic impact of digitisation in education became an evident risk for increasing exclusion in our cities and metropolises.

However, not all LRGs were prepared to respond to the needs of school-age people (from kindergarten to university). In this sense, the interviews revealed that the main problem for households was not only the possibility of accessing a stable internet connection—in many cases the use of this connection was limited to the consumption of streaming digital content—, but also the possibility of accessing an appropriate device to follow the courses.

This situation was exacerbated when the person, or their caregivers in the case of children, did not have the appropriate digital literacy for issues that were essential to access the service, such as digitally identifying themselves, setting up a video call or creating an e-mail account to receive the educational material.

The main response from the cities interviewed consisted of a mix of two strategies: providing properly configured digital devices to access online courses and offering stable internet connections free of charge or financed by public resources. Despite this effort, the whole educational community (policy makers, teachers, students) faced the challenge of overcoming the already existing diversity of digital skills. From digitising educational material to how to keep students engaged in a digital environment. The answers to this challenge go well beyond the answers obtained from the interviews conducted, but all cities agreed on the urgent need to rethink the educational system in order to align it with the possibilities that digitisation could bring to society and increase the quality of life.

Caring for older people

As the World Health Organisation (WHO) has clearly stated: "Social isolation and loneliness among older people are growing public health and public policy concerns which have been made more salient by the Covid-19 pandemic.²⁵ This feeling of loneliness affects all social profiles, and it has increased notably following the Covid-19 pandemic, when physical distancing became a social norm in many cities. Although the peak of the pandemic seems to be over, this social behaviour is unconsciously still present in our cities and metropolises.

To respond to this situation, many LRGs delivered devices to elderly people feeling lonely. Those devices were previously adapted to make them easy and ready to use, and as intuitive as possible. The aim of this strategy was mainly to make it easy for them to contact their relatives, social services, health monitoring and/or volunteers properly prepared to alleviate the feeling of loneliness of these people.

Digital illiteracy represents negative consequences for any collective, but for older people, it has an additional risk to their quality of life. To overcome this challenge, some strategies from the use-experience perspective can be implemented, for example selecting appropriate colours for the applications to make them easy to identify, an intuitive and short sequence of steps to access services or reducing the number of notifications received. Additionally, policy-makers should be aware of the digital solutions that older people are already using to communicate with their relatives, especially with regard the instant interactive messaging services.

²⁴ A detailed explanation and examples can be found at: <u>https://blogs.unicef.org/east-asia-pacific/</u> six-ways-tech-can-help-end-gender-based-violence/

^{25 &}quot;Social Isolation and Loneliness Among Older People". World Health Organisation, International Telecommunication Union and United Nations (2021).

City examples

Gender-oriented policies

Bordeaux

Bordeaux Métropole is paying particular attention to making job opportunities attractive for women. The metropolitan authority is putting effort into hiring women and fighting the natural trend of the ICT job market to prioritise the recruitment of men.

Women from the technology sector also visit schools to share their labour experiences and success as a concrete action to motivate young women students to focus their careers within the ICT sector.

Sydney

The city focuses on providing safe spaces for women and using technology to enhance women's safety in public spaces. Working in partnership with state government transport services and digital innovators, Sydney has been collecting data and feedback from women regarding their experience in public spaces. This data will be used to better design public space, particularly transport hubs.

In terms of safe digital access, Sydney is increasing awareness of safety in the context of online harassment and domestic and family violence, securing a smart device, identifying whether there is a digital track through the device, and fighting online harassment and cyberbullying through social networks.

Education

Bordeaux

Covid-19 posed many challenges for Bordeaux, but it helped to accelerate the internet strategy based on social inclusion. During the pandemic, the public authorities temporarily loaned the tablets in primary schools to the parents of students who had no digital devices at home.

In just a month, Bordeaux Métropole developed software to teach the basics of using and browsing cities' websites so they could carry on using public services available through the internet. This was done by a team of 48 trainers (with a hybrid profile between a social worker and a multimedia trainer), to give an appropriate answer to technical issues, but also to identify the specific socio-economic needs of families.

Buenos Aires

Since 2011 the city has been implementing the Sarmiento Plan, the digitisation strategy for the city's public-school system. The main objectives of this plan are to promote quality education with equal opportunities and possibilities, and to favour socio-educational inclusion.

This plan has a device delivery strategy that is not only restricted to students; instead, it addresses the educational community in a comprehensive way, including online and offline technical assistance, and the role of a digital pedagogical facilitator. Each facilitator will be a pedagogical partner for teachers and will assist them in the design and implementation of digital teaching activities.

By having a digital inclusion strategy in place before the pandemic, the city prevented the digital divide from increasing significantly during that time.²⁶

Caring for older people

Barcelona

The city council is tackling the loneliness of elders with a very successful initiative called "Vincles BCN". "Vincles BCN" aims to strengthen the social relationships of elderly people who feel lonely and improve their well-being through technology. For this reason, the initiative offers an internet connection and lends tablets with a specific app to allow participants interact with each other and communicate with other people. Participants therefore needed basic digital skills to use the tablets, which was an additional challenge to their loneliness. This example illustrates how local administrations often learn by doing.

New York

The New York City Internet Master Plan found that more than 1.5 million New Yorkers, or 18% of all households, do not have home or mobile broadband.²⁷ This group includes low-income older New Yorkers without affordable internet connectivity options and unable to access information or services. During the Covid-19 pandemic they were at higher risk of being negatively affected both in terms of social interaction and remote health follow-up.

The free tablets were distributed in partnership with the Department's senior centre network (more than 280 centres, clubs and satellites) to

²⁶ Plan Sarmiento, https://www.buenosaires.gob.ar/sarmientoba/

²⁷ Connected NYCHA: Older Adults; https://oats.org/client-projects/connected-nycha-older-adults/

older new yorkers who were selected based on eligibility by senior centre staff and the Department, with priority given to older New Yorkers who lived alone, did not have an internet-enabled electronic device (computer, tablet or smartphone), lived in a Taskforce on Racial Inclusion and Equity (TRIE) neighbourhoods, and were active senior centre participants interested in virtual programming.²⁸

The tablets have free internet service through June 2022, and are preloaded with applications, including Senior Planet, which offers online resources and virtual workshops, Zoom, Gmail, and the NYC COVID Safe app. Tablet recipients also receive free technological support and training on navigating the internet and using online applications.

When the pandemic caused the physical closure of senior centres, their services transitioned to virtual programming and over-the-phone. These virtual programmes included fitness classes, art workshops, and social events, and were attended by about 40,000 individuals.

Johannesburg

The Digital Ambassadors Programme²⁹ has been designed to train first-time internet users on how to access the City's free wi-fi and make use of online services. These ambassadors gain both income and entrepreneurial awareness during the programme which enables them to start their own micro enterprises. This has been a successful experiment in which 50% of participants were women or younger women. The programme empowered 1,800 unemployed youth, contracting them over 12 weeks. They were digitally skilled and trained to start their micro-enterprises.

28 <u>https://www1.nyc.gov</u>29 http://digitalambassadors.org.za

Policy recommendations

Accessing digital infrastructure

- All cities' facilities and spaces (buildings, libraries, schools, health services, transport, and parks) should be considered potential locations to install wi-fi hotspots. To do so, LRGs should be ready and open to create multilevel spaces for coordination with regional and national institutions in order to adapt the existing legal framework to local needs.
- While taking advantage of the growing digital possibilities, LRGs must be alert to social exclusion and inequality threats. In this sense, public wi-fi offers affordable connectivity to socioeconomically disadvantaged collectives.
- LRGs are big buyers. This means that thanks to public procurement and joint procurement, LRGs can influence the market by introducing social and environmental clauses into the bidding process, thus forcing private stakeholders to offer more advantageous proposals for the city and its people.
- LRGs need to ensure solid digital infrastructures that enable them to deliver services and consolidate two-way communication channels between the government and the community.
- Metropolitan governance must be leveraged to boost the development of common digital infrastructures in the territory, and to enable the development of joint regulation and joint procurement, thus improving the market supply.

Digital literacy

- While digital channels allow access to more and better interactions with inhabitants, some measures must be taken at all levels: training one's staff, improving the user experience, ensuring universal access to digital services, and taking the necessary precautions to safeguard privacy rights and ensure data security.
- It is critical to define and communicate an easy-tounderstand policy on how personal data will be used and stored by the municipality. This helps reduce the distrust of digital services and encourages people to use the digital dimension of the public services.
- Designing the digitisation of some public services is as important as planning the period during which analogue and digital interfaces will coexist. This transition period is critical to ensure that digitally illiterate groups have assured these services and equal opportunities to access certain rights.

Building bridges, reducing the digital divide

- Specific projects, pilot projects or strategies should be implemented to obtain mass data on digital use cross-referenced with the socioeconomic profile to design and implement more effective ad hoc digital policies.
- Free public wi-fi offers affordable connectivity to socioeconomically disadvantaged collectives. LRGs should be creative and innovative in designing funding structures, bearing in mind the importance of offering added-value services to residents.
- The digital gender gap needs to be specifically addressed: including a gender perspective in digital policies, promoting digital careers for women, and making digital environments accessible and safe for women. On this issue, it is particularly important to implement campaigns to prevent digital harassment of girls and women, which is just as present in the digital world as it is in the real world, or even more so.
- LRGs are big and can influence the market by introducing social and environmental clauses into the public procurrement process forcing the private sector offer to change.

City Factsheets

The factsheets of the cities participating in the study are presented below, based on the interviews and additional desktop research. The cities are listed in alphabetical order.





Source: Barcelona City Council.

Barcelona is the capital city of Catalonia, and it has more than a million and a half inhabitants. It is one of the most densely populated metropolises in Europe. Barcelona's metropolitan area includes 36 municipalities, making it the sixth most populated metropolitan region in the European Union.

Digital inclusion has been a priority policy area over the past years, and the City Council has unfolded many programmes and projects to grant connectivity, access to devices and IT training. One of the key elements regarding digital inclusion policies for the City Council has been mapping the digital divide. The last survey, carried out in 2020, showed that only 1% of the families living in Barcelona do not have access to the internet for economic reasons. However, what the report also showed was that age, income and education level condition access to the internet. Around 90% of city residents go online daily, but this percentage falls to 35% for older adults over 74 years of age. The negative impact of Covid-19 was a significant hit, not only in health matters but on digital rights and equality of opportunities in the city. In that sense, in low-income areas of the city, more than half of its inhabitants were not able to work from home. Nonetheless, remote education was a possibility for most people living in Barcelona and the rest of Catalonia. However, approximately 27% of students were still unable to study remotely due to many reasons such as lack of digital devices, not enough reliable access to internet, or the digital literacy of the family members.

On the other hand, since Covid-19, e-government procedures have increased exponentially. 75% of city residents are now carrying out administrative procedures online, although this percentage is not equal for all ranges of ages or different income levels, as high-income residents tend to carry out more digital procedures than low-income residents.

"Barcelona Wi-fi" is the public Wi-fi infrastructure of Barcelona, and the City Council is deploying it throughout most of the city districts.

- The public Wi-fi infrastructure is yet not been deployed throughout the entire city since it is not easy to reach all areas and extend the network through street infrastructure.
- Spanish regulation on competition in broadband internet services, set by the Comisión Nacional de los Mercados y la Competencia (National Markets and Competition Commission) CNMC resolution on competition to private carriers, limits the public Wi-fi capabilities and quality of service.
- The city is overcoming regulatory barriers by offering full-speed internet services by installing routers in cityowned facilities and municipal governmental buildings. Public services buildings and transportation offer unlimited internet connection as a secondary service.
- The city is only allowed to offer 256kbps per user, limiting the usability of the infrastructure and making it almost unattractive for daily usability.
- Barcelona uses its optical fibre network, independent of the private-owned optical infrastructure servicing the city, and services municipal buildings, mainly civic centres and libraries.

Digital literacy

Different factors explain the digital gap, most importantly income disparities and age. The city has a particular way of tackling the digital gap that consists of making helpful technology for digitally unskilled people: basing its strategy on utility rather than being digitally skilled with no specific purpose. Useful, helpful technology is much more attractive to people, easing the fight against digital literacy. The project "Connectem Barcelona" (Let's Connect Barcelona) illustrates this approach:

Connectem Barcelona Project:



- Location: Trinitat Nova, a neighbourhood with 9,000 residents in Nou Barris, a district of Barcelona.
- 400 households are taking part in the project, which will end in June 2022.
- The city provides them with high-capacity computers valued at 700 euros and a mobile data connection, thanks to a public-private collaboration with ICT companies.

- The objectives for the city council are to offer devices and internet services as means to provide people with digital skills and to estimate the financial cost of scaling up the project.
- How it works: a social facilitator (ICT agent) goes in public facilities and trains them to use different digital solutions, focusing on why solutions are helpful and how people can deal with everyday administrative procesures.
- Every week, the city council asks people by telephone how they are using the devices and for what purposes.



According to the city council, 92% of the city's residents have an internet connection. However, the municipality has found out that low-income households use their connection differently to higher-income households. Their primary usage is content consumption of media and social networks rather than educational or professional use.

Digital literacy at the city council:

The city aims to offer its entire catalogue of public services via digital channels and a hybrid (physical and digital) approach to interacting with residents. However, there is an internal challenge, as many people working at the city council do not have sufficient digital skills.

Building bridges, reducing the digital divide

According to the municipality, more than 90% of inhabitants have a household internet connection and the lack of connectivity has not been detected as the primary cause of the digital divide in Barcelona.

- The main factor that explains the digital divide is age, and inhabitants with less digital skills have more difficulties using digital devices and the internet.
- On gender, when it comes to accessing the internet and interacting with public administrations, there is no significant difference between men and women.

The gender-digital oriented policies focus on fostering the role of women and wage equality in the ICT industry and in the whole digital sector, which predominantly employ men; and on using digital technologies as a tool for gender equality.

Bordeaux





City of Bordeaux. ©Borja Lopez, Pexels.

The city of Bordeaux has a population of nearly 260,000 and its metropolitan area has a total population of 800,000. Through various initiatives the metropolitan region has been able to anticipate social and economic needs and challenges related to digital inclusion. Most important among these initiatives in promoting digital rights in Bordeaux have been the creation of a participatory group system; the making of a digital inventory that allowed the development of a White Paper on digital solidarity; the digital training of social actors; the rethinking of digital public service interfaces; and interviews on the ground to assess the best way of surgically implementing digital infrastructure and services. Bordeaux Métropole is deploying high-speed access for residents. The way Bordeaux approaches public wi-fi has changed over the years. In the past, the public administration understood public wi-fi as a complementary service. Now it is seen as an essential right for social inclusion.

80% of the metropolitan area has optical fibre coverage, and metropolitan authority has designed and deployed the 5G network in the area. However, so far, public wi-fi policies have been defined by each municipality, with the metropolitan authority implementing the policies depending on their preferences.



80% Metropolitan area has optical fibre coverage

- Some municipalities, particularly the smaller ones, have only one hotspot for the whole municipality, while others, like Bordeaux, have several of them.
- As the digital department for all 28 municipalities around Bordeaux, the metropolitan authority is developing a plan and a four-year implementation schedule targeted at responding to the increasing social needs, focusing on disadvantaged groups such as students, homeless people, and solo workers.



- The potential use of public wi-fi determines its installation. The city interviews the residents of an area to find out more about their preferences when accessing wi-fi. From those interviews it has been detected that, for example, hotspots could be placed in street furniture, which would provide shade and privacy. Including this perspective in designing the deployment of hotspots allows a fine-tuning process based on people's needs and options each municipality has.
- Public services, such as wi-fi, are being provided while demonstrating that it does not compete against the private sector: The municipalities' choice of infrastructure to provide public wi-fi can either use the metropolitan authority's own network infrastructure, which is based on a public-private partnership, or a private carrier's infrastructure.

Digital literacy

- Covid-19 brought many challenges for Bordeaux, but helped to accelerate the internet strategy based on social inclusion:
 - During lockdown, the public authorities temporarily loaned the tablets in primary education schools to the parents of students who had no digital devices at home.
 - In just a month, and in cooperation with a non- profit association, Bordeaux Métropole developed software to teach the basics of using and browsing the cities' websites so they could carry on using public services available on the internet.
- Bordeaux Métropole is collecting data to identify profiles which, in turn, will allow it to design the most appropriate digital policies for each group.
- Regarding digital literacy, Bordeaux Métropole is trying to define the impact on the residents of the policies it is implementing. For example, the impact is not measured as the number of people trained, nor the number of training hours delivered, but by analysing the economic impact of accessing digital public services, such as medical appointments, instead of having to travel to the medical centre to make one.
- Internal digital policy among public servants is being tackled internally through a training programme that uses cooperative and peer-learning methods to ensure effectiveness. In these methodologies, leaders take an essential role in motivating the team in the learning process, leaving no one behind.
- The training programme's success is measured as the capacity to build a learning methodology that can be continuously adapted to changing digital training needs.

Building bridges, reducing the digital divide

- Efforts focus on raising awareness of the internet's risks for young people and students, focusing on misinformation and privacy.
- Women from the technology sector visit schools to share their employment experiences and success as a specific action to motivate young women students to focus their careers within the ICT sector.





City of Buenos Aires. ©Andrea Leopardi, Unsplash.

Buenos Aires is the capital city of Argentina. It has more than 3 million people within its municipal boundaries and 15 million in its metropolitan area.

To respond to the crisis generated by Covid-19, the city council launched BOTI, an initiative to provide a direct communication channel between the municipality and its residents using WhatsApp that offers services such as information on public transport and mobility as well as health and safety (vaccines and Covid-19 tests results).

However, access to a digital connection is still not possible for all residents. Not all the people living in informal settlements have access to the internet, and for many people who have it, the quality in terms of stability and speed is not good. The city is facing significant challenges. Covid-19 has established barriers to accessing essential goods and services, as many people lack broadband and digital devices. According to a study carried out by the Government of Argentina, among students with digital devices, only 76% could attend virtual classes, a percentage that fell to below 40% for people without that kind of technology at home.

Telecommuting has also been a big hit during Covid-19. In the Autonomous City of Buenos Aires, around 43% of the employees could work from home with equipment provided by their employers. However, on the outskirts of the city, where more low-income people live, the figure was only 27%. The pandemic has also widened the gender gap in employment terms, where digital rights are a critical factor. More women (12.5%) have lost their jobs than men (7.2%), in relative terms, due to Covid-19.

By law, companies providing telephone or internet services in Argentina must allocate 1% of their net income to a trust fund set up to bring connectivity to places without it. The National Communications Authority (ENACOM) manages the Universal Service Trust Fund (FFSU). Thanks to this money, the Autonomous City of Buenos Aires is rolling out a public wi-fi network throughout its municipal territory, the "BA WiFi" programme. The city is constantly creating new services and simplifying the existing ones. BOTI is its flagship solution to let people interact directly with the city.

The "BA WiFi" programme (Autonomous City of Buenos Aires)

- Is a public-owned and managed wi-fi network delivering total coverage for the entire municipality.
- The service is free with no time limit, although the speed is limited to 5Mbps. Users must introduce a token every hour to renew the connection.
- There are more than 700 connection points in the Autonomous City of Buenos Aires.

(12) 700 Connection points

- The connection points are in underground and Metrobus stations, libraries, hospitals and health facilities, communal headquarters, parks and squares, museums, streets and central areas of the city, and public places throughout the city.
- The "BA WiFi" programme is exclusive to the Autonomous City of Buenos Aires; the other cities of Greater Buenos Aires also have their respective programmes, although not on the same scale or with the same coverage. There is therefore no metropolitan-wide programme or strategy.

Digital services

- The municipality uses a citizen folder to unify residents' information in a single repository.
- The City of Buenos Aires plans to implement biometric solutions to allow people to carry out practically all administrative procedures digitally.

Grants

- The central government funds cities under specific guidelines, and cities design and implement digital literacy programmes.
- Plan S@armiento brings notebooks and internet connectivity for educational purposes to students.

Digital literacy

With the Plan Futuro 2022-2030, the city of Buenos Aires offers training courses and tools to reduce digital literacy. They are aimed at people who have not finished primary education or are unemployed.

Covid-19's impact on city strategies

- The pandemic has changed the whole internal working process at the city council. Thanks to the simple way BOTI operates, the municipality is overcoming its internal digital gap. Digitally unskilled public servants can use the tool.
- Covid has accelerated the digital transition of the municipality. Many public services, such as the payment of taxes, have moved from physical to digital predominance.

Building bridges, reducing the digital divide

- Buenos Aires has a set of policies to tackle the digital gap. Even though most of them are not specifically gender-oriented, their objectives are to promote and improve women's opportunities in terms of personal growth and labour in the technology sector.
- Buenos Aires' municipal website brings together policies aimed at women and young people, such as training courses and job opportunities related to programming, marketing and design, informatics and systems, ICT and electronics and entrepreneurship and management, in a single portal.







City of Johannesburg. ©Clodagh da Paixao, Unsplash

Johannesburg and its metropolitan area represent the most populated region in South Africa. The current metro area population of Johannesburg in 2022 is 6 million, the city represents an important pole of economic activity and job opportunities. Johannesburg is facing the need to ensure access to services already digitalized by offering new platforms and services online.

South Africa's internet penetration rate stood at 68.2 % of the total population at the start of 2022. Over 40% of the population has internet access through personal digital devices. Inhabitants can access the internet through internet services at public places such as restaurants and shopping malls and through public internet services at government buildings.



Public Wi-Fi access of Johannesburg

 By the end of 2022, the city will have over 3000 hotspots for accessing public Wi-Fi.



- All government buildings have Wi-Fi, and inhabitants can access the public network in public places such as bur rapid transit stations, metro stations, and railway stations.
- The city plans to expand its public internet services to mini-bus taxis (buses that carry up to 15 people).
- The city is rolling out free Wi-Fi hotspots throughout Johannesburg, providing each resident with 500 MB of data per day, per device.



- Free Wi-Fi will be priorities as a basic service need in efforts to transform the city into a Smart City
- Wi-Fi will be connected in all the cities 7 regions and informal settlements
- The cost of data connection is regulated at a national level to lower its cost
- The Metropolitan Trading Company (MTC), which is an entity of the City of Joburg Metro municipality, is improving the city's digital infrastructure. MTC is a Broadband Network company designed to offer both wholesale data services to public and private entities

- The city has developed new digital platforms such as the eJoburg platform, one of the city's smart portals, which already allows inhabitants to make payments to the city. Other digital platforms already being used include an e-learning website, accessible from anywhere and with free content, aimed at strengthening the Library Services Digital Skills program.
- Public-private collaborations with network providers will be formed to ensure that these Wi-Fi rollout plans are carried out

Digital literacy

Johannesburg is focusing its digital literacy policies on providing easy-to-use technologies that are not intimidating to use for inhabitants. According to the report The State of ICT in South Africa, almost half of the population aged 15 years and older (47%) is not using the Internet. However, rather than having a digital literacy strategy, the City has initiatives such as the e-Learning programme that is facilitated at all community libraries to ensure that digital literacy is carried throughout.

Building bridges, reducing the digital divide

Reducing digital divide

- The Digital Ambassadors Programme has been a successful experience in which 50% of participants were women or younger women. The program empowered 1.800 unemployed youth, contracting them over 12 weeks, and they were digitally capacitated and trained to start their micro-enterprises.
- The municipality focuses its strategies on low-income areas and collectives with a higher social and economic exclusion risk. This strategy does not include a gender perspective, but vulnerable collectives include older adults, women, and other priority groups.

← Índice





City of Montréal. ©Jackie Hutchinson, Unsplash.

Montréal is the most populous city in the province of Quebec, with more than 1.7 million people living in the city. With a more than 4 million metropolitan area, it is the second most populous city in Canada. In a context of highly digitised economic activity, and while carrying out an ambitious Smart Cities Challenge project called "Montréal en commun", the city is committed to guaranteeing data privacy and security and ensuring the primacy of the general interest. Through its brand-new Montréal 2030 strategy, developed during the pandemic, the city has self-imposed a strategic framework to implement/put into practice the actions to reduce digital gaps.

Montréal's public wi-fi network

 It is a free service made up of more than 825 access points located across the island of Montréal.



- All public buildings have public internet access hotspots and there are also some in the public transport system.
- The municipality is rolling out the digital infrastructure using a public-private partnership, with a private company working with the local public administration to provide the public wi-fi.
- Public wi-fi provision is complicated in the final mile due to a mixed funding approach between the city and the borough, which has to add funds to pay for the infrastructure due to the technical requirements that increasingly condition internet installation in areas far from the city centre.

Grants for accessing infrastructure:

 The cost of the internet is very high: Canada has the second most expensive internet bill of the G7 counties after the United States for connection speeds of over 41 Mbps.



- During the pandemic, students could send their homework by e-mail or using the regular postal service. The city found out that low-income students tend to send their homework via the standard postal service, showing differences in their access to and use of the internet compared to higher-income students.
- The federal government offers grants targeted at low-income families so they can afford the cost of the internet. To complement this opportunity, the City of Montréal supports providing digital devices in case they are too expensive for households.

Digital literacy

- The city offers digital literacy services via NGOs, which usually work at a federal level through collaboration with public-social organisations.
- Kids learning to code: this is an action carried out via organisations that work with schools and the city council to promote advanced digital skills, specifically programming and coding.
- The 19 boroughs act differently and independently to develop tailor-made digital literacy programmes, with differences between them in terms of impact and people helped.
- The city offers training courses to its workers to reduce the digital gap.





New York City. ©Sam Trotman, Unsplash

The City that Never Sleeps: New York City is a world-renowned metropolis that is working to become a more just and fairer city and universal broadband and other digital rights are key to fulfilling that vision. With nearly nine million residents, of which nearly 37% are foreign-born and 49% (Census 2020) speak a language other than English at home, New York is one of the most diverse, multiracial, and dynamic cities in America. Together with Barcelona and Amsterdam, New York is a founding member of the Cities Coalition for Digital Rights, underscoring the inclusive values and practices driving its efforts to mitigate the digital divide's impact on generations of New Yorkers while advancing digital age human rights with strategies for emerging technologies such as Artificial Intelligence (AI) and the Internet of Things (IoT).

However, systemic challenges persist. Many New Yorkers are still left out of full participation in digital economy and life: At the onset of the Covid-19 pandemic, 40% of New Yorkers did not have mobile and home broadband, while 18% of City households, or 1.5 million residents, had neither mobile nor a home subscription. 28% of neighbourhoods are without a choice for commercial fibre optic service, limiting essential access to job opportunities, education, and public services. Affordability is an even more critical hurdle – where access may exist, many New Yorkers struggle to pay for internet service.

- In 2020, the City launched the NYC Internet Master Plan³⁰. It is a modern blueprint for transforming broadband infrastructure and service guided by five principles - equity, performance, affordability, privacy, and choice. The Internet Master Plan is a roadmap to achieving affordable broadband for all, delivering the largest investment ever by an American city - \$157 million for capital construction - to build new, publicly owned, open-access broadband infrastructure. To accomplish this goal, New York City sourced 100,000+ real-estate assets across 18 municipal agencies to host the equipment necessary for new affordable networks to operate in underserved neighborhoods. Engaging minority- and women-owned business enterprises (M/WBEs) in the industry's economic growth, and incentivizing vendors to offer affordable high-quality internet service options are part of the design.
- Aligned with the Mayor's Taskforce on Racial Equity & Inclusion, the Internet Master Plan initiative prioritizes connectivity in neighborhoods that have been historically underinvested in with regards to housing, public services, and infrastructure. These neighborhoods have been continuously subject to systemic, structural, and racialized barriers to opportunity, including digital redlining and higher rates of Covid-19 infections and mortality. During the next three years, 1.6 million New Yorkers will benefit from new broadband infrastructure built in under-connected neighborhoods, 250,000 residents will have new affordable service options in the first half of 2022, and 11 new vendors -- half of them M/ WBEs -- will change the face of the city's broadband marketplace. The goal is to create competition and lower prices for residents and businesses.
- Looking ahead, the City will take lessons learned from its historic infrastructure investment to better identify and measure digital equity conditions and outcomes.

Digital literacy

The Internet Master Plan puts digital inclusion at its core, and recognizes the role that public libraries, after-school programs, and community-based organizations play in making investments in internet infrastructure meaningful for broad adoption. A digital inclusion resource inventory scan conducted in 2019 identified more than 500 public computer centers across the City, hosting 11,000 computer workstations, 21,000 open lab hours per week, and 2,500 digital literacy training hours per week. NYC digital inclusion (DI) initiatives that address access and adoption include:

 Free Wi-Fi to the largest public housing development in the nation consisting of 96 buildings housing over 6,500 New Yorkers. On a monthly basis, 250 terabytes of data are streamed, equal to 50 million songs or 25 times the amount of data the Hubble Space Telescope produces every year. Nearby, Queens Public Library offers digital skills programs to thousands of residents.

- Connected NYCHA: Older Adults: Rapid pandemic response identification of isolated low-income older adults and delivery of 10,000 internet-enabled tablets to residents in 288 public housing developments across all five boroughs. Program integrated online/phone-based coaching for elders by senior-oriented non-profit.
- Connected Communities: Long-term funding program expands digital literacy skills through libraries, public housing facilities, senior centers, and community centers in the City's highest poverty neighborhoods. Agency partners include Parks, New York City Housing Authority, and Department for the Aging.

Building bridges, reducing the digital divide

The development of digital services for New Yorkers aligns with the City's work to close the digital divide; poorly designed platforms and interfaces act as barriers to essential public services and undermine the utility of digital infrastructure. Covid-19 has underscored the need for hybrid solutions so The City's multi-pronged approach to addressing this inequity includes simultaneously:

- Building infrastructure and fostering new and affordable internet service options for under-connected neighborhoods and communities;
- Offering digital inclusion resources to enable New Yorkers to safely go online and reach their goals, and increasing access to devices to access the internet;
- Creating modern digital services to ensure that all New Yorkers are able to access city services and telehealth, as well as connections to caregivers, family, and community. By creating a "no wrong door" model for digital services, the City broadens resident engagement in digital life, reducing digital divide.

New York also maintains policies and directives designed to close social and structural inequalities in technology through initiatives such as the Tech Talent Pipeline, to stimulate talent development and improve residents' digital skills.

Through its focus on the foundational digital right to be connected and through the need for equitable and easy-to-use online services and strategies around the impacts of emerging technologies, New York City continues to invest in becoming a city in which everyone can thrive.

30 https://www1.nyc.gov/assets/cto/downloads/internet-master-plan/ NYC_IMP_1.7.20_FINAL-2.pdf







City of São Paulo. ©Joao Tzanno, Unsplash.

The city of São Paulo is the most populous in Brazil and South America and is also the fourth largest city proper by population in the world. The municipality is at the core of a large metropolitan area, called Greater São Paulo, consisting of 39 municipalities and almost 12 million residents. The city of São Paulo is the state capital. São Paulo city council is committed to promoting a digital framework through specific policies and actions, some of which have already been successfully implemented. Among these actions, the Wi-Fi Livre SP stands out as a free public wi-fi programme to deliver free internet access to the city. This is particularly important for a country where nearly 20% of the population lacks internet connectivity and a broadband connection with a speed of up to 10Mbps costs around 100 reals per month, more than 10% of the minimum wage.³¹

³¹ A game of patience and persistence: life in São Paulo's internet deserts; by Giacomo Vicenzo of Énois Agência de Jornalismo, The Guardian, 2019.

To increase the coverage of the open wi-fi connection, the city had to overcome the cost of digital infrastructure. Thanks to regulatory changes such as the adoption and enforcement of the data protection law and public-private cooperation, this has been possible.

The city is working to keep expanding its public wi-fi network, which has more than 1,000 hotspots throughout the city

- The city is expanding the network to 4,000 access points by installing them outside and inside more public facilities. The goal is to expand the network five times by 2024, up to 20,000 access points.
- Libraries, parks in cultural centres, sports facilities in educational centres and schools, theatres, subprefecture offices, and tourist hotspots have connectivity access points, as does public transport (buses).
- The business model is based on public-private collaboration. Revenues for the private sector come from advertising. To access the service, users must watch first commercial advertisements. A 30-second advertisement equals 30 minutes of free internet access. At the end of this time, the user can repeat the process, watch a new advertisement, and keep using the service. Access points in buildings can also include physical commercial advertisements.
- The contracting model for expanding the network includes mandatory locations based on social vulnerability indexes and seeks an equitable distribution of access points throughout the city.
- The model is financially sustainable and is underpinned by a win-win situation and is considered a success by the increasing number of people accessing the service.
- Through ordinances, decrees, and technical notes, the city council created an environment of legal certainty, along with the required technical framework, to attract private companies interested in installing new wi-fi access points in all parts of the city.
- The municipal government has institutional limitations restricting continuing improvements to the digital infrastructure: budget limitations and institutional maturity.

Digital literacy

Telecentres are the public facilities in São Paulo's promoting interaction among residents and between residents and the city. Now, São Paulo is facing the challenge of using telecentres and fab labs as hubs for delivering social services to communities by integrating social services into these places as one-stop shops.

 The programme of Telecentres started in 2001, and now there are more than 130 Telecentre facilities across the city. In each of them, users can find between 30 and 50 laptops and local agents train people on how to use them.

- Telecentres now have become community hubs. These are not only places for accessing the internet, they have also become community hubs, where people self-organise and set up entrepreneurship courses in cooperation with private companies.
- The city has a network of fab labs called Fablab LIVRE SP. Today, there are 13 of them in all municipal administrative regions. Their mission is to become hubs of creativity, innovation, and training, putting the focus on technology.
- Telecentres and fab labs are becoming platforms to deliver other public services in communities beyond their primary purpose. These public facilities therefore also operate as nodes to provide additional public services.

Building bridges, reducing digital gaps

São Paulo wants to study the real impact of digital inclusion policies; and sketch a new model for digital inclusion in the city. In 2017, the municipality created the (011).lab, the government innovation lab of the São Paulo City Department of Innovation and Technology, to implement digital rights policies to reduce digital gaps. Three programmes carried out by the lab in collaboration with other city departments stand out as primary examples:

- The redesign of the city website: this helped to reduce the digital gap due to better accessibility to public services by digital means. It achieved a 30% reduction in the withdrawal of residents when seeking a service and a 200% increase in the display of transport services.
- CopiCola is a pilot project to disseminate and put innovative practices within the city council. The concept is based on the idea of copying and pasting ways to identify, implement and disseminate good practices while offering savings in time and resources. The project has already built a repository of projects in many fields, such as digital capacity building, behavioural sciences, open innovation, and citizen engagement.
- Generating skills in the digital transformation of services: 26 municipal services have been already digitised through this initiative. For example, the creation of the Elderly Parking Card services of the Department of the Road System (DSV) achieved a 40% saving for elderly residents using public parking and approximately 54% for the government thanks to the digitisation of the service. Through this initiative, the laboratory has been crucial in consolidating the digital transformation of public services through its role in building the internal skills of the team, which has been essential in tackling the internal digital gap.

Sydney



City of Sydney. ©Dan Freeman, Unsplash.

With more than 5 million inhabitants, Greater Sydney is the most populous city in Australia. Located in the state of New South Wales, it is usually ranked as one of the most liveable cities in the world. It is a member city of the Cities Coalition for Digital Rights, and it is currently deploying an ambitious Digital Plan.

Covid-19 has negatively impacted the state of digital rights in Sydney. For instance, for the Greater Sydney area, unemployment increased in 2020 when compared to 2019. Also in labour matters, it is estimated that around 47% of employees could work from home while the other 53% had jobs that could not allow them to work remotely. Digital services experimented with an unprecedented demand right after the pandemic was impacted. As a matter of fact, there were 100.000 enrolments in free online TAFE (Technical and Further Education) courses across the state of New South Wales (May 2020), where 48% of students were doing it for the first time. During that time, culture and arts were mainly consumed through online channels, and health and legal services offered through online solutions increased exponentially. According to the Greater Sydney Commission, in its City-Shaping impacts of Covid-19 report, elderly people, with lower levels of digital literacy found it harder to virtually access family, friends and services; and when it comes to gender inequalities, women accounted for 62% of FTJ losses from March to August 2020, when they were barely representing the 40% of the total workforce.

On the other hand, the pandemic has accelerated the use of technology in the Greater Sydney area. Collaborative work and social platforms have been the norm since then. From a more general perspective, over the last 10 years, the percentage of households with access to the internet increased from 70% to 85%, easing the overall capacity to access digital services. However, a lack of internet access is still a problem, especially for low-income households. A recent survey of social housing residents in inner city Waterloo identified digital access and social connections as a high priority with 24% reporting insufficient or no digital connection.³²

32 Survey by Counterpoint Community Servivces of 100 Waterloo residents, May 2020.

When it comes to digital infrastructure, the state and the federal governments are responsible for regulating the expansion and improvement of , the telecommunications landscape. In the context of one of the biggest countries in the world, where 86% of the population lives in cities and mostly on or near the coastal fringe, delivering digital infrastructure to rural areas is a challenge.

Sydney's inhabitants can access a public Wi-fi service in libraries and in public facilities such as community centres and recreational facilities like swimming pools. It is in these specific public places where people can use public Wi-fi as there is no possibility to do it in open streets.

- The city's ambition is to provide access to digital services for its communities, including people who live and work in the city and in its suburbs.
- The public Wi-fi service at public facilities is being provided in collaboration with a third-party internet services company.
- For casual use, targeted at visitors and tourists, companies and businesses in the area, such as restaurants and shopping malls, do have their own publicly accessible internet services.
- The state government is responsible for the State Library, which has taken the lead in providing Wi-Fi services to other libraries across Sydney.
- Sydney extended the availability of the Wi-fi service found in libraries by extending it across the community centres throughout the city.
- When accessing the internet, there are limits related to equity of access to the internet and devices if there is high demand.
 - As part of the emergency response during Covid-19, instead of directly subsidizing internet bills for low-income inhabitants, the city funded socially and economically disadvantaged communities that cannot afford a private broadband connection, by providing them with data vouchers, devices (laptops, tablets, smartphones and Wi-fi dongles) and preloaded sim cards for phones. The city achieved this through grants to local community organisations to provide devices and data, as well as build community capacity in understanding how to access affordable data and home internet services for mobile phones and at home devices.
 - Sydney is currently investigating potential corporate partnerships with the private sector to provide devices and data for vulnerable communities. The provision of data or internet services at home would be for a set period of time.

Digital literacy

Sidney has a range of training courses aimed at tackling the digital divide provided through libraries and community centres. These courses existed before Covid-19, and during the pandemic they were also offered online. This implied a challenge for the city, as these courses are targeted to people, particularly older residents, who did not have enough digital skills or infrastructure to access courses online.

- Sidney has a strong history in the digital literacy space in terms of identifying communities that need help, and in delivering actions aimed at tackling the digital divide. For instance, libraries are conducting one on one tutorials and training with individual residents. Also, there is the possibility to borrow a digital device instead of a book and the library staff assist and train people on how to use the device.
- With a focus on older residents and people who live with disability, , the city collaborates with other municipalities in increasing community access to devices and data, improving digital literacy, and providing inclusive digital services, in the context of Covid-19.
- Sidney consistently offers digital training to its own staff. In the past 5 years, the city has improved the digital skills of the people working for the municipality, and internal literacy no longer represents a significant challenge.

Building bridges, reducing the digital divide

- Sidney is focused on providing safe spaces for women and the use of technology to enhance women's safety in public spaces. Working in partnership with state government transport services and digital innovators, the city has been investigating how technology can be used to provide feedback from women on their experience in public spaces and how this information can inform public urban design, particularly for transport hubs. The provision of reliable access to Wi-fi becomes a crucial element for the design of safe spaces if these technologies are to be utilised.
- In terms of safe digital access, the city is increasing awareness of safety in the context of online harassment and domestic and family violence (in terms of securing a smart device, identifying if you are being digitally tracked through your device, and fighting online harassment and cyberbullying through social networks).
- As a local government, Sydney has controls and procedures to ensure equal opportunity employment between men and women and has this year achieved a positive gender pay gap of 3.4% in favour of women. However, unfortunately in ICT technical positions, women candidates very rarely present. Women candidates tend to present for project management, service management, creative design, project coordination and business analysis rather than technical architecture, and development roles.
- Sidney works with Police to prevent vulnerability to cyber-crime and provides resources to build the capacity of trusted frontline community-based organisations to build the community's understanding of digital safety. The digital safety of women and children in the context of domestic and family violence requires specialist services to provide appropriate support.





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Avinyó, 15. 08002 Barcelona (Spain) Tel. +34 93 342 94 60 metropolis@metropolis.org metropolis.org



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