

# 3 AI use cases in LAC governments

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The development of Artificial Intelligence (AI) strategies in multiple countries reflects growing awareness of the huge potential for AI application in the public sector, both to improve internal processes and the ways in which government engages with and serves its people. Governments at national and sub-national levels around the world and in Latin America and the Caribbean (LAC) countries have already designed and implemented numerous AI projects and initiatives, as discussed throughout this chapter.

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Previous OECD work and research from other organisations have identified a number of key areas where governments are focusing their real-world use of AI in the public sector.

Over the last year, governments worldwide have rapidly deployed innovative solutions in response to the COVID-19 crisis,<sup>1</sup> many of which employ AI to deliver tailored solutions and messaging for citizens and residents to assist their pandemic response (OECD, 2020<sup>[1]</sup>) (OECD, 2020<sup>[2]</sup>).

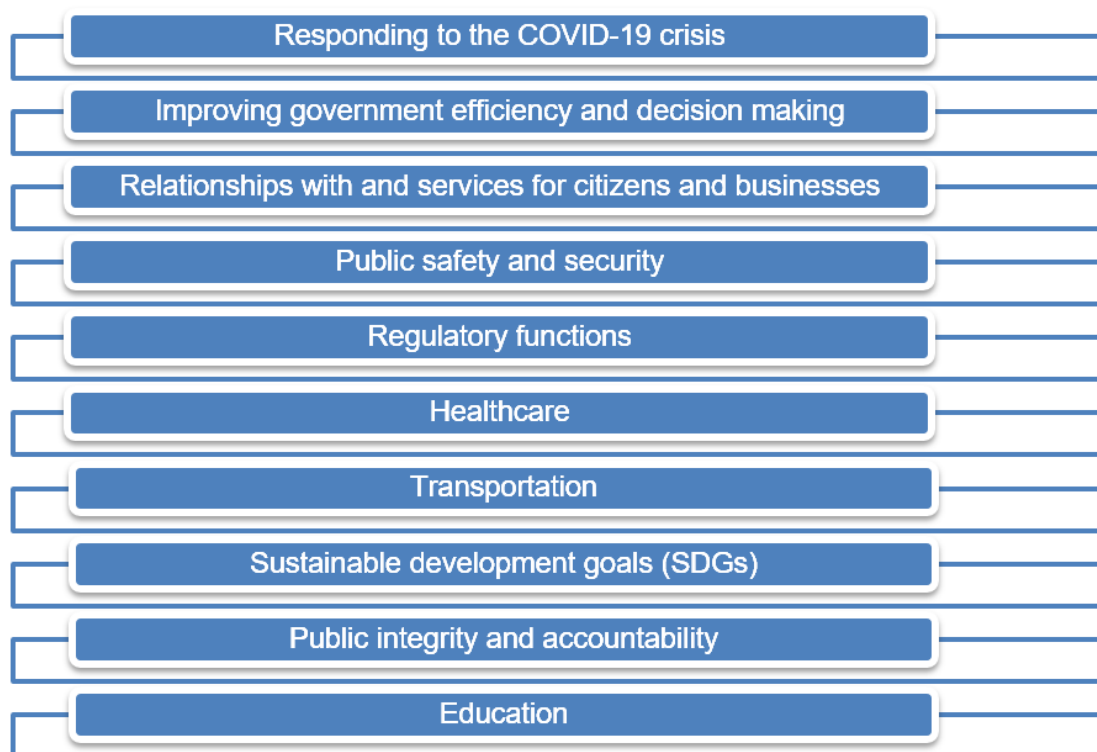
Beyond immediate needs in times of crisis, the most common and immediate uses of AI in the public sector involve automating simple tasks and guiding decisions to make government more efficient and informed (Ubaldi et al., 2019<sup>[3]</sup>), (Partnership for Public Service/IBM Center for the Business of Government, 2019<sup>[4]</sup>). Governments have also used AI strategically in a variety of ways to enhance their relationships with and services for citizens and residents (Berryhill et al., 2019<sup>[5]</sup>).

Globally, a number of topic-specific use cases have emerged in key application areas for AI in the public sector. In particular, many public sector efforts have been concentrated on public safety and security, enhancing regulatory functions, healthcare and transportation (Ubaldi et al., 2019<sup>[3]</sup>). Governments have also used AI to address cross-cutting issues, such as the Sustainable Development Goals (SDGs) (Berryhill et al., 2019<sup>[5]</sup>) (IDIA, 2019<sup>[6]</sup>).

Research for this report found that AI usage in LAC countries is generally aligned with global patterns. However, examination of LAC country AI efforts also found numerous use cases related to enhancing public integrity and accountability, and improving education. This trend accords with two regional priorities: preventing corruption and reducing school dropouts.<sup>2</sup> These efforts are noteworthy because they demonstrate a stronger focus on these areas than observed by the OECD in other regions and countries in regard to AI in the public sector.

This chapter explores a non-exhaustive set of real-world projects that fall under the observed themes. In particular, it explores LAC public sector AI projects in the areas presented in Figure 3.1.

**Figure 3.1. Use cases discussed in Chapter 3**



### Responding to the COVID-19 crisis

Before the world was even aware of the threat posed by COVID-19, AI systems had detected the outbreak of an unknown type of pneumonia in China. Countries are now using AI tools to help monitor and predict the spread of COVID-19 in real time, to enable rapid diagnosis, and to search for treatments at an unprecedented pace and scale (OECD, 2020<sup>[7]</sup>). One of the most evident outcomes of the innovative response of governments to the pandemic was the rapid acceleration of digital innovation and transformation (OECD, 2020<sup>[8]</sup>). Throughout the crisis, AI technologies and tools were employed to support the efforts of policy makers, the medical community and society at large to manage every stage of the pandemic and its aftermath (OECD, 2020<sup>[7]</sup>). In particular, governments used AI to:

- Understand the virus and accelerate medical research on drugs and treatments
- Detect and diagnose the virus, and predict its evolution.
- Assist in preventing or slowing the spread of the virus through surveillance and contact tracing.

- Respond to the health crisis through personalised information and learning.
- Monitor the recovery and improve early warning tools.

LAC governments are also employing or developing the use of AI in a variety of ways that match and reinforce these themes (see Box 3.1).

### Box 3.1. LAC country AI responses to COVID-19

#### Dr ROSA and Dr NICO (Panama)

Dr ROSA (Automatic Health Operational Response) is a virtual assistant/chatbot accessible through WhatsApp that performs virtual COVID-19 screenings. Dr ROSA asks users a series of questions and then uses AI algorithms to evaluate the symptoms. Based on the data, the user may be passed to a virtual office, where they are evaluated by professional doctors who can send an ambulance with specialised personnel for physical observation and home care, or even refer them to a hospital centre as appropriate. Dr NICO (Individual Notification of Negative Case Obtained) is a virtual chatbot that reaches out to citizens who test negative and provides them with social distancing recommendations.

Source: <https://rosa.innovacion.gob.pa>, <https://oecd-opsi.org/covid-response/dr-rosa-chatbot> and <https://forbescentroamerica.com/2020/03/23/panama-usa-inteligencia-artificial-para-contener-el-covid-19>.

#### AI and data science for pandemic outbreak detection (Argentina)

A public-private consortium consisting of the Interdisciplinary Centre for Studies in Science, Technology and Innovation (CIECTI), the Sadosky Foundation, and the Ministries of Health and Science Technology and Innovation, is creating a system for early detection of epidemic outbreaks. The system will apply AI technology to digital medical records in the public health subsector and other relevant data sources. The process will start with records from two Argentinian provinces and then expand to the rest of the country. The system also considers a gender perspective when capturing primary data in order to generate equitable predictive algorithms. The project is being funded by the International Development Research Centre (IDRC) and the Swedish International Development Cooperation Agency (Sida).

Source: [www.fundacionsadosky.org.ar/proyecto-ia-y-ciencia-de-datos-para-deteccion-de-brotes-pandemicos](http://www.fundacionsadosky.org.ar/proyecto-ia-y-ciencia-de-datos-para-deteccion-de-brotes-pandemicos) and <https://oecd.ai/dashboards/policy-initiatives/2019-data-policy/Initiatives-26699>.

#### Voice response robots for medical consultations and tracking cases (Brazil)

In Brazil, AI-assisted interactive voice response (IVR) robots conduct over-the-phone interviews with members of the population to gather data about their movements, their use of public transport and recent contact with potentially infected people. The robots then cross-reference the information with a database to assess who else might be at risk. The IVR asks for permission to make follow-up calls every 8, 10 or 12 hours, as necessary.

Source: <https://trends.oecd-opsi.org/wp-content/uploads/2020/11/OECD-Innovative-Responses-to-Covid-19.pdf> and <https://oecd-opsi.org/covid-response/brazil-uses-ai-and-voice-response-robots-for-medical-consultations-and-tracking-cases>.

#### Funding AI-driven science, technology and innovation projects to tackle COVID-19 (Colombia)

Colombia is funding different types of projects using AI and data analytics to develop rapid diagnostic techniques, devices and/or tools to care for medical personnel and patients. Notable examples include:

- DeepSARS (Bucaramanga) and COVID detection for remote villages (Medellin). This project models and characterises sequences of X-ray images using AI techniques to separate and

identify different stages in the progression of respiratory conditions related to COVID-19, in order to support early diagnosis and management of patients.

- In order to support COVID-19 emergency decision making in the National Institute of Health, a new project will generate analytical models using machine learning and data analytics by integrating external data sources with information available in the public health surveillance system.

Source: <https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-26726>.

## Improving government efficiency and decision making

In the context of government, an important and immediately achievable benefit of AI is improvement in the way that public servants perform their tasks. AI has the potential to help government shift from low-value to high-value work and focus more on core responsibilities by “reducing or eliminating repetitive tasks, revealing new insights from data ... and enhancing agencies’ ability to achieve their missions” (Partnership for Public Service/IBM Center for the Business of Government, 2019<sup>[4]</sup>).

The average civil public spends up to 30% of their time on documenting information and other basic administrative tasks (Eggers, Schatsky and Viechnicki, 2017<sup>[9]</sup>). Automating or otherwise avoiding even a fraction of these tasks would enable governments to save a tremendous amount of money and re-orient the work of public servants around more valuable tasks, resulting in more engaging jobs and a greater focus on people (Partnership for Public Service/IBM Center for the Business of Government, 2019<sup>[4]</sup>).

The growing interest in AI is driven by the vast and increasing amount of available data. However, large volumes of data can also hinder governments from extracting useful knowledge, a phenomenon referred to as “information overload” (Speier, Valacich and Vessey, 1999<sup>[10]</sup>). AI can help governments overcome information overload, gain new insights and generate predictions to help them make better policy decisions. In Argentina, for example, the Prometea system has reduced operation times in the justice service, leading to replication in institutions inside and outside the country. The use of robots to automate repetitive tasks can also help governments improve efficiency by reducing the processing time of certain public services. Examples of these uses of AI can be found in Box 3.2.

### Box 3.2. Making work processes more efficient using AI and automation

#### Prometea (Argentina)

Prometea is a multilayer AI system designed to expedite the work of the justice service. It was jointly developed in 2017 by the Public Prosecutor’s Office of the Autonomous City of Buenos Aires and the Laboratory of Innovation and Artificial Intelligence of the Faculty of Law of the University of Buenos Aires (IALAB). The objective of Prometea is to free judicial officials from performing repetitive tasks, allowing them to focus on complex cases where human input is necessary. The system acts as a virtual assistant that predicts case solutions (based on previous cases and solutions) and helps provide information required to assemble the case file. Prosecutors then decide if the predicted solution is worthy of consideration. In Buenos Aires, between October 2017 and mid-2020, Prometea helped resolve 658 cases related to the right to housing, the right to work and the rights of people with disabilities. Out of 149 housing protection reports where the system was used, the decisions of prosecutors coincided with those of the system 90% of the time. On average, the system can help prepare 1 000 indictments in 45 working days, compared with 174 days without assistance. Prometea

is currently used by the Inter-American Court of Human Rights and the Deputy Attorney General for Administrative and Tax Litigation of the Public Prosecutor's Office of the City of Buenos Aires. However, civil society has called for continued scrutiny of Prometea's implementation as doubts persist over the explainability of its decisions and the associated repercussions for due process. Other concerns include the degree of responsibility of the involved actors (developers and judges) and how training data and design biases might affect end results.

Source: <https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-26831>, <https://oecd-opsi.org/wp-content/uploads/2021/02/Argentina-National-AI-Strategy.pdf> and [www.perfil.com/noticias/sociedad/justicia-automatizada-como-funciona-el-software-que-ya-se-usa-en-caba.phtml](http://www.perfil.com/noticias/sociedad/justicia-automatizada-como-funciona-el-software-que-ya-se-usa-en-caba.phtml) (Giandana and Morar, 2019<sup>[11]</sup>).

### **Laura (Argentina)**

Laura is a system developed by the Ministry of Finance of the Province of Cordoba to automate tasks in bureaucratic procedures. An example of its application is the verification of retirement contributions in the Social Security National Administration (ANSES). Normally, this task would be carried out by a public servant in order to start the provincial retirement process. Instead, Laura connects potential beneficiaries with the ANSES database to verify their pension situation, including key information about salaries and social security contributions over the years. It determines which benefits apply and the retirement amount, and allows for quicker detection of possible incompatibilities.

Source: (Gómez Mont et al., 2020<sup>[12]</sup>).

### **Improving process quality through robots (Uruguay)**

In an effort to simplify and optimise government processes, AGESIC, the digital government agency of Uruguay, conducted a study which projected that implementation of Robotics Process Automation (RPA) could produce a saving of between 40-75% of public servants' time. AGESIC implemented several RPA pilot projects with a maximum execution time of six months in different state agencies, including the Presidency of the Republic and the Ministries of Defence, Industry, Energy and Mining, Social Development and Housing. The results of the pilot demonstrated a significant reduction in the time public servants spent on mundane tasks, as well as an error rate of 0%.

Source: [www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-conocimiento/comunicacion/noticias/pilotos-de-rpa-automatizacion-robotica-de-procesos](http://www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-conocimiento/comunicacion/noticias/pilotos-de-rpa-automatizacion-robotica-de-procesos), AGESIC officials.

### **Tool for the anonymisation of legal documents (Argentina)**

Under this GovTech project, Cambá Cooperative, a software bank work co-operative has developed a scalable AI system to anonymise legal documents in Spanish, under the premise of personal data protection, to reduce time in judicial systems and the margin of error.

Source: [www.empatia.la/en/proyecto/ia2](http://www.empatia.la/en/proyecto/ia2).

### **Digital Justice (Colombia)**

The Superintendence of Industry and Commerce of Colombia is implementing the Digital Justice project to digitise the jurisdictional functions of the entity in order to maximise efficiency. Among various actions, the project uses AI to optimise the processing of audio recordings of judgments. This process is able to optimise around 16 500 judgment reports per year amounting to approximately 5 TB of data.

Source: <https://govcodashboardcovid19.shinyapps.io/ProyectosTD>.

Moving beyond the automation of repetitive tasks, cases such as the prediction of judgments in lawsuits against the State in Colombia show that AI can also improve efficiency by providing richer analyses for enhanced decision making (Box 3.3). The PretorlA case, presented in the same box, provides an example of how public institutions can interact with civil society, listen to key concerns about the implementation of AI and making the necessary adaptations to the technology. This case highlights the importance of a vigilant and capable civil society, with capacities to collaborate with the public sector in the co-creation of trustworthy digital public services.

### Box 3.3. Using AI to guide and improve decision making

#### PretorlA (Colombia)

The “Acción de Tutela” (i.e. Constitutional Action for the protection of fundamental rights) is an instrument available to every person in Colombia allowing them to demand immediate protection against any violation of fundamental rights resulting from the act or omission of a public authority or individual. As part of its mission, the Constitutional Court selects key *tutelas* to set legal precedents on the provision of fundamental rights. However, the Court receives more than 2 000 tutelas each day. Reading, analysing and systematising the information contained in one tutela usually takes a person 36 minutes, making it humanly impossible to read them all. PretorlA automatically reads and analyses all complaints, detects and predicts the presence of predefined criteria, and intuitively presents reports and statistics. The system serves as a tool for judges, thereby ensuring there is a human in charge of the decision-making process.

In its initial version, launched in early 2019, the system was as an adaptation of Prometea (see Box 3.2 3.2), but civil society groups warned against its opacity and possible conflicts with Colombian data protection and transparency legislations. After several discussions,<sup>3</sup> the Constitutional Court transformed the project through the adoption of more explainable and transparent technologies. This led to the new version of PretorlA, launched in mid-2020, which incorporates topic modelling technology instead of neural networks. The new version is fully explainable, interpretable and traceable (see (Berryhill et al., 2019<sup>[5]</sup>) for a discussion on neural networks and how they can limit explainability). The developer, the Laboratory of Innovation and Artificial Intelligence of the Faculty of Law of the University of Buenos Aires (IALAB), claims it is the first predictive AI system to be used in a high court in the world.

Source: <https://ialab.com.ar/pretoria>, [www.datasketch.news/p/la-propuesta-para-automatizar-la-clasificacion-de-tutelas-en-colombia](http://www.datasketch.news/p/la-propuesta-para-automatizar-la-clasificacion-de-tutelas-en-colombia), <https://dpicuantico.com/2019/02/04/inteligencia-artificial-en-la-corte-constitucional-colombiana-otra-experiencia-prometea> and [www.elespectador.com/noticias/judicial/prometea-la-nueva-tecnologia-para-seleccion-de-tutelas-en-la-corte-constitucional-articulo-838034](http://www.elespectador.com/noticias/judicial/prometea-la-nueva-tecnologia-para-seleccion-de-tutelas-en-la-corte-constitucional-articulo-838034).

#### SISBEN (Colombia)

The Identification and Classification System of Potential Beneficiaries for Social Programmes (SISBEN) is an algorithm that uses primary data from individual surveys on living conditions (e.g. income information, access to public services) to create reliable and up-to-date socio-economic profiles of Colombian populations, allowing the government to better target social programmes. The system uses a Quantile Gradient Boosting machine learning model to identify potential beneficiaries. Survey data are also compared with other databases to identify inconsistencies. The system grades an individual’s “prosperity” on a scale from 0 to 100 and public entities then use this score to determine whether the person can access social benefits.

Questions have been raised about some of the inherent characteristics of SISBEN. In particular, the system could interfere with an individual’s right to fair treatment and access to information: “People who are qualified by means of an algorithm must be able to demand an explanation for the qualification they

received, the reasons for any type of scoring they receive due to inconsistencies, including the databases used and ways of replication” (López and Castañeda, 2020, p. 14<sup>[13]</sup>).

The system’s data has also been used for experimentation. For instance, SISBEN data were used to support a data analytics business development programme where private participants created an experimental model to measure and detect frauds in the system.

Source: (Gómez Mont et al., 2020<sup>[12]</sup>), (López and Castañeda, 2020<sup>[13]</sup>).

### **Prediction of judgments in lawsuits against the State (Colombia)**

The National Agency for Legal Defence of the State (ANDJE) and Quantil (a private company) developed a mathematical tool to estimate the probability that a litigation process will fail against the nation and recommend an optimal amount of settlement based on the current conditions of the case. The predictive component of the model is based on machine learning techniques, while the reconciliation optimisation part is based on financial and game theory fundamentals.

Source: <https://quantil.co/agencia>.

## **Relationships with and services for citizens and businesses**

In addition to using AI to address specific topics, governments are also utilising AI applications in a variety of ways to engage with citizens, residents and businesses. One popular type of AI used in the public and private sectors, especially in the exploratory stages, is chatbots. Simple chatbots use a rules-based approach to interact with citizens in order to perform functions such as answer frequently asked questions. More sophisticated versions leverage machine learning to undertake more complex, less concrete interactions, as illustrated by the case of Jaque on the digital platform of the State of Alagoas, Brazil (Box 3.4).

### **Box 3.4. Using chatbots in the public sector**

#### **Jaque and the Services Guide (Brazil)**

Jaque is a virtual clerk based on AI designed to guide citizens through “Services Guide”, a digital catalogue that centralises all information on public services offered by the State Government of Alagoas. Services Guide provides a step-by-step explanation for each service provided by each public agency. It contains information on the length of processes, the documents needed, the location and operation time of agencies, the availability of services and so on.

Services Guide is a three-layered system that manages and standardises information. The first layer consists of a website that centralises all information for easy access by citizens. The second layer is dedicated to content management and receives information submitted by public agencies on their services. The third layer is an open application programming interface (API) from which Jaque draws information to provide virtual clerk services.

Jaque becomes more efficient through ongoing interactions. The State Government now plans to expand this chatbot service to other websites and even social media, making Jaque an ever-present avatar of the public service.

Source: <https://oecd-opsi.org/innovations/services-guide>.

### **AGESIC Virtual Assistant (Uruguay)**

The virtual chatbot developed by AGESIC, Uruguay's public digital agency, was developed in 2018 as a pilot project to experiment and gain experience in the development of AI solutions. This Citizen Service chatbot was "trained" on the questions most frequently submitted through service channels. The virtual assistant answers questions and performs actions to solve problems, such as recovering passwords. It currently forms part of the Multichannel Strategy for Citizen Assistance, which seeks to bring the state closer to people by eliminating technological and/or accessibility barriers, and providing comprehensive information on state procedures and services, quality personalised attention, as well as support and guidance to carry out online procedures through multiple service channels.

Source: [www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-conocimiento/comunicacion/noticias/primer-chatbot-en-linea-de-agesic](http://www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-conocimiento/comunicacion/noticias/primer-chatbot-en-linea-de-agesic) and [www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-conocimiento/politicas-y-gestion/programas/es-atencion-ciudadania](http://www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-conocimiento/politicas-y-gestion/programas/es-atencion-ciudadania).

AI can also be used to provide simpler and more tailored services for citizens and businesses. For instance, the Commercial Opportunities Map in Argentina and ParaEmpleo in Paraguay employ algorithms to scan multiple data sources and compare them against user needs and characteristics in order to produce better recommendations. AI technologies have also been used by governments to better comprehend the opinions and perspectives of their citizens at scales that were previously unfeasible. This is achieved through the use of Natural Language Processing and clustering techniques to gain valuable insights from vast troves of information (Berryhill et al., 2019<sup>[5]</sup>). *Querido Di ario* in Brazil is a project that flips these roles and allows citizens to gain deeper understanding of the information published by the state in official newspapers. Finally, the Colombian Government created a project to enhance its relationship with farmers by optimising soil analyses and providing tailored recommendations for soil fertilisation. These examples are discussed in Box 3.5.

### **Box 3.5. Using AI to better respond to citizen needs**

#### **Commercial Opportunities Map (Argentina)**

The Government of the City of Buenos Aires provides business outlook information to entrepreneurs interested in starting or expanding businesses in the city. The Commercial Opportunities Map asks for two inputs (a geographical area and a business category) and delivers detailed information about the characteristics of the market in each area using four indicators: the opening and closing of businesses, risk level, and population and real estate indicators. The platform works through an algorithm that compiles different sources of data outlining commercial opportunities per neighbourhood, ultimately enabling direct investments to where it is presumed that they will generate more value. Future versions of the platform plan to include prediction models.

Source: (Ortiz Freuler and Iglesias, 2018<sup>[14]</sup>), [www.buenosaires.gob.ar/empresas/planifica-tu-emprendimiento/elegi-tu-local/mapa-de-opportunidades-comerciales](http://www.buenosaires.gob.ar/empresas/planifica-tu-emprendimiento/elegi-tu-local/mapa-de-opportunidades-comerciales).

#### **ParaEmpleo (Paraguay)**

ParaEmpleo is a national job placement platform that links labour market supply and demand, speeding up the process of searching for a job and the selection of personnel. Using deep learning algorithms and knowledge graphs, it suggests the best possible matches between candidates and companies. Users provide their skills, qualifications, specialisations and linguistic knowledge, among others, to



create their profiles. The platform analyses which are the most requested jobs and skills and advises users on how to be more competitive in the job market, for instance, by recommending free or paid courses that they can take to improve their chances of being hired. ParaEmpleo has a database of more than 25 000 applicants.

Source: <https://paraempleo.com.py> and [www.iadb.org/es/mejorandovidas/algoritmos-que-te-consiguen-empleo-en-paraguay](http://www.iadb.org/es/mejorandovidas/algoritmos-que-te-consiguen-empleo-en-paraguay), (Gómez Mont et al., 2020<sup>[12]</sup>).

### Querido Diário (Brazil)

Querido Diário is an upcoming project that will use AI “to classify, contextualise and expand the information contained in Brazilian official newspapers, making them available on a platform that will allow the viewing of these newspapers in an open and friendly format”. The project is financed by Empatía, an initiative of ILDA and the Centro LATAM Digital, and supported by the International Development Research Centre (IDRC) and the Inter-American Development Bank (IDB).

Source: <https://empatia.la/en/proyecto/dear-official-gazette>.

## Public safety and security

Public safety and security is one of the main focus areas for governments exploring the use of AI. It encompasses both physical safety security and cybersecurity, and can cover a broad swath of topics for which governments are responsible including law enforcement, disaster prevention and recovery, and military and national defence. The *State of the Art in the Use of Emerging Technologies in the Public Sector* paper notes, for instance, that “in the field of surveillance, computer vision and natural language processing systems can process large amounts of images, texts and speeches, to detect possible threats to public safety and order in real time” (Ubaldi et al., 2019<sup>[3]</sup>).

The OECD could find no instances in which LAC governments are actively using AI to support cybersecurity efforts. However, Uruguay does appear to be advancing towards this area in the form of its “aiUTEChallenge” Cybersecurity Strengthening Program, which is exploring ways to apply AI in combination to monitoring, detection and response to incidents, and digital identification, among others. The country expects to make concrete developments in these areas in the near future.<sup>4</sup>

While the use of AI for cybersecurity remains light, there are many use cases concentrated in law enforcement and other efforts related to the criminal justice system. As a broad example, the International Criminal Police Organization (INTERPOL), of which all countries in the scope of this review are members,<sup>5</sup> is using different types of AI systems for law enforcement and has published *Artificial Intelligence and Robotics for Law Enforcement*,<sup>6</sup> which explores the potential of AI for policing and details real-world projects already underway. Predictive AI systems in particular have gained popularity in the region (see the examples in Box 3.6), often among local urban governments. As can be seen in the examples, AI systems in this area may have some utility, but they also often operate in grey areas and introduce ethical dilemmas that governments must fully consider and evaluate. Transparency of uses and processes and explainability of algorithms become key elements to engage stakeholders in detecting risks of unfair treatment and finding alternative solutions. Additionally, as illustrated by the case of Predpol in Uruguay, governments should also consider that using AI may not always be the best solution to a problem and recognize that other technologies can have similar effects at lower costs.

### Box 3.6. LAC examples of using AI for law enforcement and criminal justice

#### Predpol (Uruguay)

At the end of 2013, the Uruguayan government acquired Predpol AI-enabled policing software to predict the potential for crimes in different areas of the country. The system develops detailed and tailored maps highlighting areas where data suggest a high probability that crimes will be committed, therefore allowing for more effective police deployment. It offered predictions based on data collected by the Ministry of the Interior, but doubts remained because of the possibility that historical biases in the criminal system could bias the data against marginalised groups.<sup>7</sup> Knowledge about the model design was not made public, undermining efforts to explain its decisions, although, according to public information, the machine learning algorithm relied on four variables: type of crime, location, date and time. In 2017, the Ministry of Interior carried out an evaluation: half of the police stations in Montevideo employed Predpol, while the other half used a more traditional annual retrospective reporting system based on statistical tools created by the Police's Tactical Information Directorate (DIT). The process found no significant differences between sets of predictions, thus Predpol was discontinued.

Source: (Ortiz Freuler and Iglesias, 2018<sup>[14]</sup>), [www.minterior.gub.uy/images/2017/Noviembre/Cmo-evitar-el-delito-urbano.pdf](http://www.minterior.gub.uy/images/2017/Noviembre/Cmo-evitar-el-delito-urbano.pdf).

#### Prisma (Colombia)

The “Recurrence Risk Profile for the Request for Incarceration Measures” (Prisma) is a tool for predicting the risk of criminal recidivism in individuals. The AI system was developed to support prosecutors when requesting preventive detention in jail against someone investigated by the Colombian authorities. It also compiles all information available about the person under investigation: the number of previous arrests (crime and date), ongoing processes in the Accusatory Oral Penal System (SPOA) and judicial proceedings, and previous incarceration events. Similar criminal rating systems are being used around the world with questions raised about their potential for discrimination and bias. For example, civil society organisations and researchers found that similar algorithms used in the United States to forecast the likelihood of future criminal behaviour, “have been written in a way that guarantees black defendants will be inaccurately identified as future criminals more often than their white counterparts”.<sup>8</sup> However, researchers also showed that it was possible to address the disparity if the algorithms focus on the fairness of outcomes, rather than on “predictive parity”. As such algorithms are proprietary software, it is not always possible to access the source code in order to understand how the decisions are made. Organisations such as the Partnership for AI have recommended that either risk assessment tools should be used or that standards be put in place to mitigate issues related to accuracy, bias, explainability, governance, accountability and other issues.

Source: [www.elespectador.com/noticias/judicial/prisma-el-programa-de-la-fiscalia-para-predecir-la-reincidencia-criminal](http://www.elespectador.com/noticias/judicial/prisma-el-programa-de-la-fiscalia-para-predecir-la-reincidencia-criminal), [www.youtube.com/watch?v=wubXNQ1JxPk](https://www.youtube.com/watch?v=wubXNQ1JxPk), [www.partnershiponai.org/artificial-intelligence-research-and-ethics-community-calls-for-standards-in-criminal-justice-risk-assessment-tools](http://www.partnershiponai.org/artificial-intelligence-research-and-ethics-community-calls-for-standards-in-criminal-justice-risk-assessment-tools).

Another security area where AI is increasingly applied globally is surveillance. Facial recognition has been used in a number of cities around the world to help locate suspected criminals and counter terrorism (Berryhill et al., 2019<sup>[5]</sup>), although the practice can be highly controversial. LAC governments do not appear to make significant use of facial recognition AI systems; however, the practice is growing in the region, as is civil society resistance (Arroyo, 2020<sup>[15]</sup>). In some LAC countries, experimental usage is underway to use AI to analyse facial imagery along with other video, imagery and audio (e.g. voices) for the detection of criminal activity. The cases of the Command, Control, Communications and Computing Centre (C4) in Bogotá (Colombia) and ECU 911 in Ecuador (Box 3.7) highlight two main challenges governments need

to overcome in order to generate trust in these systems: establishing the necessary safeguards when processing sensitive personal data (e.g. biometric data) to prevent unfair treatment of historically discriminated groups; and defining clear frameworks for the use of these technologies in order to prevent possible abuses such as the profiling and persecution of political opponents or protesters.

### Box 3.7. Detecting criminal activity through video, image and audio recognition

#### Command, Control, Communications and Computing Centre – C4 (Colombia)

The Command, Control, Communications and Computing Centre (C4) in Bogotá is testing a predictive security system capable of identifying criminal gangs and their behaviour through statistical and trend analysis, and video, image and audio recognition. The system allows investigators to trace criminals by filtering certain characteristics among live and historical data collected through 6 000 video surveillance cameras and voice registers from emergency calls.

Currently, three facial recognition cameras are also being tested, but their success in terms of facial comparison depends mainly on the quality of the database. For this reason, Bogotá's administration is seeking an agreement with the National Registry, Colombia's identification institution, to access biometric data provided by registered individuals for their identification documentation.

Civil society voices have warned that these technologies pose two issues. First, regarding technical development, the system can produce false positives raising the issue of potential discrimination or exclusion of certain populations. Second, institutional frameworks to prevent the system's use in questionable cases (e.g. the identification and harassment of protesters) are weak or absent.

Source: [www.elespectador.com/noticias/bogota/el-reto-de-anticipiar-delitos-con-tecnologia-en-bogota](http://www.elespectador.com/noticias/bogota/el-reto-de-anticipiar-delitos-con-tecnologia-en-bogota).

#### ECU 911 (Ecuador)

The ECU 911 system has a nationwide network of 4 300 surveillance cameras, 16 regional response centres and over 3 000 government employees watching video footage and responding to calls. The system has a twofold mission: tracking criminals and surveilling seismic and volcanic activity. To this end it uses thermal cameras to monitor snow-capped volcanoes, drones capable of night vision, an automated platform for sending video evidence to courts and an AI research lab. ECU 911 also has plans for large-scale use of facial recognition to catch suspects in major cities and airports, with news reports indicating that some cameras in major cities now use facial recognition technology to identify missing people and criminal suspects. Ecuador has experienced criticism over ECU 911, including an investigation by *The New York Times* which found that video recordings are shared with Ecuador's national intelligence agency.

Source: [www.ecu911.gob.ec](http://www.ecu911.gob.ec), [www.nytimes.com/es/2019/04/24/espanol/america-latina/ecuador-vigilancia-seguridad-china.html](http://www.nytimes.com/es/2019/04/24/espanol/america-latina/ecuador-vigilancia-seguridad-china.html).

As can be seen in these examples, LAC governments like other governments around the world must be cautious in exploring the use of AI in this field and should leverage this technology in ways that do not undermine public trust or tread on civil liberties. Governments need to balance the tensions of using AI systems (e.g. those using data harvesting and monitoring) to serve the public interest, with inevitable concerns about “big brother” and risks of infringing on freedoms and rights. Chapter 4 on *Efforts to develop a responsible, trustworthy and human-centric approach*, and the OECD Report *Embracing Innovation in Government: Global Trends 2020 – Public Provider versus Big Brother*<sup>9</sup> (OECD, 2020<sub>[16]</sub>) provide some guidance and considerations that governments should consider as they explore AI for public safety, security and other purposes.

## Regulatory functions

Regulation refers to the diverse set of instruments through which governments set requirements for enterprises and citizens. Regulation includes all laws, formal and informal orders, subordinate rules, administrative formalities and rules issued by non-governmental or self-regulatory bodies to whom governments have delegated regulatory powers (OECD, 2018<sup>[17]</sup>).<sup>10</sup>

While regulations and other types of rulemaking often target individuals and organisations outside of the public sector, AI provides significant opportunities to increase government capacity to improve the design and delivery of regulations and regulatory enforcement activities (OECD, 2019<sup>[18]</sup>) (OECD, 2019<sup>[19]</sup>). For instance:

- Regulators could apply machine learning tools to the vast quantities of data available to them in order to help predict where they should focus their regulatory efforts. Such tools could be used to determine which key areas and enterprises and citizens merit investigation and inspection.
- Machine learning can be used to better predict the outcome of likely litigation, ensuring greater cohesion between the views of the courts and the views of regulators.

Such potential could enable regulators to streamline their operations by allowing them to move resources away from wasteful activities – such as investigating businesses that are likely compliant with the law, or proceeding with litigation that has a good chance of being unsuccessful – towards activities that better achieve their regulatory goals. Box 3.8 discusses three examples of the use of AI to improve public sector regulatory functions, mainly through increased process efficiency.

### Box 3.8. Using AI to enhance regulatory capacity

#### Improved economic competition (Brazil)

The Administrative Council of Economic Defence (Conselho Administrativo de Defesa Econômica, CADE) uses AI to identify competition dysfunctions in critical areas of the market. Under the Ministry of Justice, CADE has developed improved techniques to detect cartel practices in areas such as gas prices.

Source: (OECD, 2018<sup>[20]</sup>).

#### Industry and Commerce Superintendency (Colombia)

The Superintendency of Industry and Commerce is the regulatory agency of the Government of Colombia in charge of regulating, among various other topics, industrial property and consumer protection. It currently applies AI as part of two public services:

- *Patent recognition*: AI is employed by the institution to expedite examinations carried out for patent applications. An algorithm trained on historical data of previous patent recognitions is used to recommend the classification and sectorisation of patents in progress.
- *E-commerce scanning*: the institution uses AI to scan e-commerce webpages and identify irregularities that may affect consumer rights.

Source: (Consejería Presidencial para Asuntos Económicos y Transformación Digital, 2020<sup>[21]</sup>).

#### KBoot: tracking potential tax evaders on Instagram (Colombia)

Medellin's digital economy has grown in recent years, yet online sales have become a challenge for the local treasury department due to an increase in tax evasion. Initial efforts to identify potential online tax evaders employed manual search and analysis to detect unregistered online stores. However, the

exponential increase in the use of social media for economic activities necessitated a new approach. In partnership with the Government Innovation Lab, the treasury worked with a local start-up to develop a bot that would automatically scrape Instagram profiles and posts for relevant hashtags, keywords and names associated with online sales in Medellin.

The AI bot, KBoot, downloaded relevant data (usernames, numbers of followers, numbers of posts and telephone numbers) to a database and the treasury department identified the individuals behind the profiles. This involved cross-checking names against their own databases and compelling telephone operators in Medellin to provide information on 9 080 users that had provided a contact number. The office identified 2 683 individuals using Instagram to advertise and sell products. Out of those, only 453 were registered with the treasury department, of which 107 were not currently operational. Some 2 230 individuals identified as selling merchandise on Instagram were not registered with the treasury department. The government integrated these businesses into the “Growing is Possible” (Crecer es Posible) programme, an initiative of the Chamber of Commerce designed to incorporate small businesses into the formal economy.

Source: <https://oecd-opsi.org/innovations/tracking-potential-tax-evaders-on-instagram>.

## Healthcare

Beyond its applications for COVID-19 response, AI is used across the healthcare sector in numerous ways, with enormous potential for government in countries that have national health services. AI applications, especially those involving machine learning, can help interpret results and suggest diagnoses, and predict risk factors to help introduce preventative measures (Ubaldi et al., 2019<sup>[3]</sup>). They can also suggest treatments and help doctors create highly individualised treatment plans. Combined with the knowledge of doctors and other medical experts, AI can lead to better accuracy, higher efficiency and more positive outcomes in the health field (see Box 3.9).

### Box 3.9. Using AI in public healthcare

#### Crecer con Salud – Growing with Health (Argentina)

In Argentina, 30% of women miss important pregnancy check-ups. The government decided to address this issue through the creation of a virtual assistant (bot) that would use Facebook Messenger to accompany women during their pregnancy and after the birth. Crecer con Salud provides personalised information according to the week of gestation and the age of the baby once born. It also sends alerts for pre- and post-natal check-ups. The government selected Facebook Messenger because the platform is used by more than 30 million Argentinians, including 90% of pregnant women in maternity hospitals, according to internal government research.

Source: <https://oecd-opsi.org/innovations/crecer-con-salud-virtual-assistant-for-pregnancy-and-early-childhood> and [www.argentina.gob.ar/salud/crecerconsalud](http://www.argentina.gob.ar/salud/crecerconsalud).

#### AnemiaApp – early detection of anaemia (Peru)

Peru’s Ministry of Development and Social Inclusion (Midis) and the Universidad Peruana Cayetano Heredia collaborated on the development of AnemiaApp, an application for quick and timely detection of anaemia in children. Based on a low-cost portable system, this mobile-based app interprets digital images taken of the subject’s eye and analyses the characteristics of the membrane covering the outer

surface. The results are then transmitted to an automatic processing service based on neural network algorithms, which determines the haemoglobin level and, thus, the presence or absence of anaemia. This application is used especially in remote areas with low access to high-tech medical equipment.

Source: (Gómez Mont et al., 2020<sup>[12]</sup>), <https://saluddigital.com/en/big-data/peru-renueva-metodos-para-detectar-la-anemia>.

### **Detecting depression, anorexia and other disorders through social networks (Mexico)**

Currently, the lack of clear statistics on depression and anorexia is an impediment to the development of public policies; however social networks provide a means of detection. Psycholinguists have identified a clear connection between language and mood or certain mental disorders. Public research scientists in Mexico at the Laboratory of Language Technologies of the National Institute of Astrophysics, Optics and Electronics (INAOE) have developed AI algorithms that can analyse vast amounts of text from social networks in order to identify potential disorders. The project, which is funded by the National Council of Science and Technology (Conacyt), the government entity in charge of promoting scientific and technological innovation, can help inform policy making and potentially provide assistance to those who facing particular challenges. At present, the project is still experimental and there is ongoing discussion about the ethical issues raised by the approach.

Source: <https://u-gob.com/con-tecnologias-del-lenguaje-detectan-depresion-anorexia-y-otros-trastornos-en-redes-sociales>.

## **Transportation**

One of the most widely publicised applications of AI is autonomous vehicles, such as the self-driving cars being tested by Uber and several major motor companies. While the government certainly has a role to play in regulating and understanding the implications of such vehicles, they seem to present less opportunities for public sector innovation. Beyond such vehicles, governments around the world and in LAC countries are using AI to transform the ways in which they predict and manage traffic flows (Box 3.10). While all of the overarching themes that the OECD has observed globally also appear to be areas of focus for LAC governments, transportation perhaps had the weakest representation in terms of observed initiatives.

### **Box 3.10. Use of AI for efficient transportation logistics**

#### **AI facilitates passenger flow at the Metro CDMX (Mexico)**

In 2015, Mexico City's now Secretary of Education, Science, Technology and Innovation (SECTEI) and the Metro transportation system jointly organised a technological innovation contest. The winning group of PhD students from the National Autonomous University of Mexico (UNAM) worked with Line 1 metro staff to analyse large datasets about passenger flow dynamics using AI. They came up with a strategy based on machine learning computer simulations to reduce train boarding and alighting times. The solution was expanded to other 14 metro stations, reducing delays and increasing passengers flow efficiency by 10-15%.

Source: (Martinho-Truswell et al., 2018<sup>[22]</sup>).

### Rural roads and satellite images (Colombia)

The Ministry of Transportation and the National Planning Department are developing a project that uses machine learning algorithms to detect and identify tertiary or rural roads from satellite images. The approach used is more time and resource efficient than traditional identification methods. The project also marked the launch of the Integral Strategy for the Tertiary Road Network and is complemented by a prioritisation instrument – the CONPES 3857 “Policy Guidelines for the Management of the Tertiary Network”. The project seeks to identify tertiary roads across 94% of the country’s departments.

Source: <https://oecd.ai/dashboards/policy-initiatives/2019-data-policyInitiatives-26727> and [https://dapre.presidencia.gov.co/dapre/SiteAssets/documentos/07-10-2020%20Proyectos%20de%20TD%2C%20Tramites%20y%20servicios%20para%20el%20ciudadano\\_Baja.pdf](https://dapre.presidencia.gov.co/dapre/SiteAssets/documentos/07-10-2020%20Proyectos%20de%20TD%2C%20Tramites%20y%20servicios%20para%20el%20ciudadano_Baja.pdf)

## Sustainable Development Goals (SDGs)

The adoption of the 2030 Agenda for Sustainable Development saw nations worldwide commit to a set of universal, integrated and transformational goals and targets, known as the Sustainable Development Goals (SDGs). The 17 goals and 169 targets represent a collective responsibility and a shared vision for the world. Governments are working to make progress to reach them by 2030, with many exploring the potential of AI to help achieve this objective.

Research by McKinsey Global Institute has identified a non-comprehensive set of about 160 cases that demonstrate how AI can be used for the “non-commercial benefit of society” (MGI, 2018<sub>[23]</sub>). Of these, 135 touch on one of the 17 SDGs. These cases often take the form of private sector initiatives, or partnerships among the private sector, public sector and/or civil society. The ECHO initiative (Box 3.11), led by the United Nations Population Fund in partnership with local governments in Colombia, illustrates how AI can be used to support the SDGs at large.

### Box 3.11. ECHO (Colombia)

ECHO is an AI-powered tool used to promote participatory planning and citizen awareness of the SDGs through a guided public debate in real time. The system translates citizens’ issues, concerns and perceptions into the language of the SDGs, enabling people to visualise how the goals relate to their concerns, and allowing them to participate in more informed discussions on public policy priorities. The result allows local governments to monitor citizen perception and effective participation.

ECHO uses the voice of citizens in guided public discussions as input, and converts them to text using Automatic Speech Recognition. The discussions are based on controlled interviews with staff highly familiar with the content of Agenda 2030. The tool then uses machine learning to link the text with the corresponding SDG goals. The resulting information is then validated by staff in order to produce a conclusive analysis. The project has also implemented a monitoring and evaluation strategy through interviews and focus groups with beneficiaries, enumerators and feedback from local authorities. This approach uses observations to determine actual understanding and learning of the SDGs and to assess the impact of the activities.

ECHO benefits two main groups: those who are unaware of 2030 Agenda and participate only rarely in local decision making, and local authorities who wish to make evidence-based decisions on issues of importance to their communities based on first-hand information.

As of 2020, the project had been implemented in Cartagena, Medellín and Montería, collecting more than 13 000 testimonials and prioritising key concerns related to the SDGs according to criteria such as neighbourhood, gender or age. The project also made available the results collected during 2019 for use in public policy planning by the new local governments of Cartagena and Medellín in 2020.

Source: United Nations Population Fund (UNFPA) officials, [www.efe.com/efe/espana/destacada/echo-una-herramienta-para-amplificar-la-voz-de-gente-y-traducirla-a-los-ods/10011-4111225](http://www.efe.com/efe/espana/destacada/echo-una-herramienta-para-amplificar-la-voz-de-gente-y-traducirla-a-los-ods/10011-4111225) and [https://whatevercamps.github.io/echo\\_vis](https://whatevercamps.github.io/echo_vis).

With regard to support for individual focus areas, LAC countries are using AI as a tool to address air pollution, a common threat in several cities and regions (see Box 3.12 for examples). Such efforts are related to SDGs 3 (good health and well-being) and 11 (sustainable cities and communities), and indicate solid progress in working towards the 2030 goals, as well as potential opportunities to explore the use of AI in supporting other SDGs. Peru's draft national AI strategy includes a specific objective to develop AI systems aligned with the SDGs, although these are not yet in place.

### Box 3.12. Experimenting with AI to measure and predict air pollution in the southern cone

#### Air quality predictive model (Chile)

This predictive model is the product of a joint effort between the GobLab of the Adolfo Ibáñez University and the State's Superintendency of the Environment (SMA), and is designed to predict air quality in the cities of Concón, Quintero and Puchuncaví, a region that suffers constantly from high levels of industrial pollution. This public-private partnership aims to strengthen monitoring capacities for the ongoing Environmental Decontamination Plan and to help the SMA take preventive measures such as public alerts for citizens and other public bodies.

Source: <https://empatia.la/proyecto/ia-para-el-cuidado-de-la-salud>, [www.revistaenergia.com/21601](http://www.revistaenergia.com/21601), [www.sustentable.cl/superintendencia-del-medio-ambiente-y-uai-obtienen-fondo-para-desarrollar-modelo-de-inteligencia-artificial](http://www.sustentable.cl/superintendencia-del-medio-ambiente-y-uai-obtienen-fondo-para-desarrollar-modelo-de-inteligencia-artificial) and [www.revistaei.cl/2020/08/17/sma-y-universidad-adolfo-ibanez-obtienen-fondo-para-desarrollar-modelo-de-inteligencia-ambiental](http://www.revistaei.cl/2020/08/17/sma-y-universidad-adolfo-ibanez-obtienen-fondo-para-desarrollar-modelo-de-inteligencia-ambiental).

#### Satellite-based air quality monitoring (Argentina)

This project seeks to map the daily and monthly surface concentration of small particulate matter (e.g. dust, ash and metallic particles) across Argentina, in order to determine the associated risk of diseases to which the population may be exposed. The project will combine satellite information in a Random Forest model and provide it to researchers and environmental authorities. The project has been developed by a consortium consisting of the National Commission of Space Activities (CONAE), the Institute of High Space Studies "Mario Gulich" (IG, CONAE/UNC) and the Ministry of Environment and Sustainable Development (MAyDS).

Source: <https://ig.conae.unc.edu.ar/sistema-de-apoyo-para-la-toma-de-decisiones-en-la-gestion-de-la-calidad-del-aire> and [www.empatia.la/proyecto/conae](http://www.empatia.la/proyecto/conae).

## Public integrity and accountability

One of the most dynamic focus areas in LAC is the application of digital technologies to improve transparency and accountability over the use of public resources. Governments are using AI as a tool to determine patterns of action of public and private actors, detect risks and vulnerabilities in public contracting, and cross-reference sources of information for better auditing and public transparency.



Although this category could be considered an expression of improving government efficiency, the strength of emphasis in the LAC region demonstrates the importance of the fight against corruption in the region.

Corruption and the mismanagement of public resources is a top concern in LAC countries, with perceptions of corruption on average higher in Latin America than in most regions (OECD, 2018<sup>[24]</sup>). According to the *Global Corruption Barometer for Latin America and the Caribbean 2019*, 65% of people in Latin America and the Caribbean think their government is run by and for a few private interests.<sup>11</sup> This contributes to an overall lack of trust in the government. The share of the LAC population having little or no trust at all in governments reached 75% in 2017, 20 percentage points higher than in 2010. The most crucial determinant to tackle this issue is strengthening public integrity (OECD, 2018<sup>[24]</sup>).

In line with the OECD Recommendation on Public Integrity,<sup>12</sup> the use cases presented in Box 3.13 address different areas of opportunity to improve public integrity in the region while also increasing the efficiency of public resources.

### Box 3.13. Using AI to increase public integrity and make better use of public resources

#### Malha Fina de Convênios (Brazil)

Federal transfers between Brazilian departments were worth around USD 300 billion equivalent between 2008 and 2018. After the negotiation and execution phases, each transfer had to undergo an accountability phase before finalisation. If this action is not performed, the agreement becomes a liability. However, the effort required for accountability analysis was much higher than the available capacity of the transferring agencies. By 2018, the average duration of the accountability phase exceeded 2.5 years. Such bottlenecks resulted in more than 15 000 transfer agreements pending analysis, representing almost USD 5 billion equivalent.

In order to reduce the time and resources spent during the accountability phase, the Brazilian Audit Office (Controladoria-Geral da União, CGU) created a predictive model to grade each agreement according to its associated risk. Malha Fina de Convênios uses a machine learning algorithm based on the characteristics of over 61 000 agreements effected between September 2008 and December 2017. The methodology also combines alerts generated during audit trails in search of predefined patterns indicating irregularities. If the risk grade does not surpass a previously defined threshold and certain other characteristics are met, the granting entity is allowed to finalise the accountability phase of each agreement. This allows granting entities to conclude this phase in less time using less resources.

By 2018, more than 4 000 findings had been shared with federal managers. These were categorised either as (1) conflict of interest, (2) non-compliance with standard, or (3) failure in financial execution. Some 3 044 agreements were flagged and more than 2 000 covenants were approved by the machine. Overall, 15 300 covenants were classified and prioritised by risk.

Source: Government of Brazil Officials, <https://bit.ly/3JzftS4>, [www.opengovpartnership.org/members/brazil/commitments/BR0019](http://www.opengovpartnership.org/members/brazil/commitments/BR0019) and <https://bit.ly/3u6e8fa>.

#### Better monitoring of public procurement (Brazil)

The Court of Accounts of the Union (Tribunal de Contas da União, TCU) in Brazil uses AI to better analyse the procurement processes of the federal administration. Based on the information published on Comprasnet, the public procurement portal, the system analyses the costs of tenders, compares the information with other databases, identifies risks and send alerts to the auditors.

Source: (OECD, 2018<sup>[20]</sup>).

### AI to detect fraudulent taxpayer operations (Mexico)

The Tax Administration Service of the Ministry of Finance and Public Credit in Mexico has tested AI algorithms that automatically identify pattern disruptions in their registries, allowing them to detect companies conducting fraudulent operations. During a six-month pilot, 1 200 fraudulent companies were detected, and 3 500 fraudulent transactions identified. Without the use of these algorithms, the analyses would have taken an estimated 18 months of human work.

Source: (Martinho-Truswell et al., 2018<sup>[22]</sup>)

### Océano (Colombia)

The Office of the Comptroller General of Colombia has created a platform to determine relationships between contracting parties at the national level, and analyse them to detect possible cases of corruption. The platform is fed data from public information sources such as national, territorial and Capital District contracting processes, fiscal officials, chambers of commerce, industry data and commerce, and information on taxpayers among others. The platform detects the intervention of “business meshes” or networks, high concentrations of procurement to common bidders, the granting of projects to sanctioned companies, and the use of business records belonging to deceased persons. Colombian officials are incorporating AI to allow for automating debugging of the platform to minimise errors and technical issues.

Source: <https://bit.ly/3pyhq9K>, [www.wradio.com.co/noticias/actualidad/con-mega-base-de-datos-contralor-ira-tras-corrupcion-en-contratacion/20181212/nota/3836803.aspx](http://www.wradio.com.co/noticias/actualidad/con-mega-base-de-datos-contralor-ira-tras-corrupcion-en-contratacion/20181212/nota/3836803.aspx) and [www.economiacolombiana.co/desarrollo-futuro/oceano-tecnologia-contra-la-corrupcion-405](http://www.economiacolombiana.co/desarrollo-futuro/oceano-tecnologia-contra-la-corrupcion-405).

## Education

A particular focus area for AI in the LAC region is education – especially preventing school dropouts. Although this issue relates to SDG 4 (quality education), the level of attention at the regional level makes it a trend worthy of a separate discussion. Education was also highlighted as a key theme at the AI Latin America SumMIT, where the participants agreed that AI could become a catalyst for change in the educational system. AI has the potential to modify ways of teaching and contribute to better follow-up of students through more personalised learning processes (Anllo et al., 2021). This growing interest in applying AI to education is directly linked to the issue of school dropouts. Only 60% of students complete secondary education, although it is compulsory in most countries of the region.<sup>13</sup> Additionally, 36% of young women who drop out of school do so due to pregnancy or maternal care, while economic reasons tend to be the main cause of school dropout among young men.

In order to address this issue, (Josephson, Francis and Jayaram, 2018<sup>[25]</sup>) recommend the use of early warning information systems in programmes and schools to identify risk situations in a timely manner, and to enable targeted and relevant interventions. Most of the use cases presented in Box 3.14 are aligned with this recommendation, specifically the use of AI to help prioritise at-risk children who may need special assistance or guidance. However, such profiling activities are not without risk. One of the first public sector applications of AI in the LAC region took the form of a system to predict teenage pregnancy and school dropout in the province of Salta (Argentina); however, concerns were raised about the possible reproduction of bias and the existence of unfair or discriminatory treatment. Considering ethical standards and principles throughout the development life cycle of an AI system is therefore crucial to delivering trustworthy, inclusive and safe AI systems. In addition, this case shows that diverse and multi-disciplinary development teams can deliver more informed, effective and tailored solutions. Other examples in Box 3.14 relate to upskilling and increasing the efficiency of public education processes.

### Box 3.14. Using AI to improve education and prevent school dropout

#### Predicting teenage pregnancy and school dropout (Argentina)

In Argentina, the Government of the Province of Salta implemented a system to predict teenage pregnancy and school dropout using machine learning algorithms trained on data collected in low-income districts of the city of Salta between 2016 and 2017. The variables included teenagers' personal information (age, ethnicity, country of origin, etc.), environment (number of people with whom they lived, availability of hot water, etc.) and if they were or had been pregnant. In 2018, the model assigned a school dropout probability of more than 70% to 418 children and adolescents, and identified 250 adolescent women with a +70% probability of pregnancy. This led the provincial government to deliver a family-strengthening scheme to develop human capabilities. While the underlying idea was to strengthen perceptions of the importance of education, the system sparked criticism from scholars and activists, in particular relating to the following elements:

- In terms of *explainability and legitimacy*, although the inputs (in this case, a private dataset) and the outputs of the model were knowable, it was not possible for the people affected to learn how or why the system arrived at a particular output due to the black box nature of the algorithm. Thus, affected populations are asked to trust an opaque system.
- Researchers also highlighted three problems within the system: the *algorithm overestimated effectiveness* due to the reuse of the training set as evaluation data (the government later stated that they had changed the evaluation datasets); *training data were biased* since they were limited to the vulnerable population sectors; and the *data were inadequate* to answer the initial question because the factors that have previously led to a pregnancy will not necessarily be the same that lead to pregnancies in the future, as there are other shifting variables involved.
- Regarding the *core concept*, it was noted that the context of structural social inequality that influences the predicted outcomes was not fully considered.

Source: (World Wide Web Foundation, 2018<sup>[26]</sup>), <https://bit.ly/363apqX>, <https://bit.ly/3JgBNQt> and <https://iaa.dc.uba.ar/es/sobre-la-prediccion-automatica-de-embarazos-adolescentes>.

#### AI systems to prevent school desertion under development (Chile, Mexico and Uruguay)

In addition to the above example from Argentina, a number of additional AI systems appear to be planned or under development in the region.

- *Chile*: the Ministry of Family and Social Development is developing an early warning system for potential school dropouts for boys and girls.
- *Uruguay*: AGESIC, the government's digital agency, is developing a predictive system to prevent school dropout. The pilot project will be developed with the fAIr LAC initiative of the Inter-American Development Bank (IADB).
- *Mexico*: the Government of the State of Jalisco and the *Tecnológico de Monterrey* University are designing a system to profile students by identifying, through a systemic approach, the factors that have the greatest impact on school dropout. With the help of an AI, the available information will then be analysed to detect patterns associated with the previously defined profiles and design better targeted strategies or programmes.

Source: Política Nacional de Inteligencia Artificial (Borrador/consulta pública) (Chile), <https://fairlac.iadb.org/es/piloto/desercion-escolar-uruguay>, <https://fairlac.iadb.org/es/piloto/abandono-escolar-jalisco>.

### Future Up (Costa Rica)

Future Up is a pilot skills and training platform that seeks to use AI to provide skill development suggestions to participants, based on their abilities, interests and experiences. The system helps users to understand the skills they should focus and it flags possible financing programmes in case an investment is required.

Source: <https://fairlac.iadb.org/es/piloto/future-up>.

### Assignment of students to educational institutions (Ecuador)

The Inter-American Development Bank (IDB) is working on a pilot project that seeks to develop a platform to centralise student assignment. The platform will provide information on the available educational offers, and allow families to select their preferences from a prioritised list. The assignment will be made through an algorithm operating under prioritised criteria defined by the public authority, assigning vacancies randomly if demand exceeds supply.

Source: <https://fairlac.iadb.org/es/piloto/asignacion-estudiantes-instituciones-educacionales>.

All of these use cases demonstrate growing interest among LAC governments in exploring the potential of AI in the public sector. As is common with other regions and countries around the world, many of the current uses uncovered represent early-stage pilots or implemented AI systems that tend to use simple but proven techniques. Several of them, though, demonstrate a growing level of sophistication in terms of techniques and machine learning algorithms. This is likely to continue as a number of LAC governments seek to achieve the goals laid out in their national AI strategies, while others work to develop their own. This growing desire to harness the opportunities presented by AI and the increasing sophistication in terms of what LAC governments seek to achieve with the technology also bring with it a number of challenges to overcome and responsibilities to meet. As can be seen in these examples, some LAC governments are already encountering ethical dilemmas and the civil society backlash that can occur as new approaches are pursued. The OECD promotes public sector experimentation and the adoption of AI when it is done in a trustworthy and ethical manner, and with the right investments and enablers in place needed to achieve successful, sustainable results. The next chapter provides guidance on how LAC governments can achieve this, and the extent to which such enablers are already in place in the region.

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## Notes

<sup>1</sup> The OECD OPSI report on *Innovative Responses to the COVID-19 Crisis*, which forms part of the Embracing Innovation in Government: Global Trends 2020 report series, provides an in-depth discussion on this topic. See <https://oe.cd/c19-innovation>.

<sup>2</sup> The OECD report *Integrity for Good Governance in Latin America and the Caribbean* found that Latin America is perceived to have a higher level of corruption than most regions (OECD, 2018<sup>[24]</sup>). Moreover, only 60% of students complete their studies in the region, even though secondary education is compulsory in most LAC countries (CAF, 2018<sup>[27]</sup>).

<sup>3</sup> <https://web.karisma.org.co/como-implementar-inteligencia-artificial-en-la-corte-constitucional-la-pregunta-que-nos-monto-en-una-colaboracion-academia-sociedad-civil-y-la-propia-corte>.

<sup>4</sup> See [www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-conocimiento/comunicacion/noticias/inteligencia-artificial-ciberseguridad](http://www.gub.uy/agencia-gobierno-electronico-sociedad-informacion-conocimiento/comunicacion/noticias/inteligencia-artificial-ciberseguridad) for more information.

<sup>5</sup> [www.interpol.int/en/Who-we-are/Member-countries](http://www.interpol.int/en/Who-we-are/Member-countries).

<sup>6</sup> [www.unicri.it/news/article/Artificial Intelligence Robotics Report](http://www.unicri.it/news/article/Artificial_Intelligence_Robotics_Report).

<sup>7</sup> For example, in New York City (US), over a period of three years (2015-2018), the city police arrested low-income and black people on marijuana-related charges at a rate eight times higher than that of whites, while studies show that marijuana use is equal across all racial groups ([www.nytimes.com/2018/05/14/opinion/stop-frisk-marijuana-nyc.html](http://www.nytimes.com/2018/05/14/opinion/stop-frisk-marijuana-nyc.html)).

<sup>8</sup> [www.propublica.org/article/bias-in-criminal-risk-scores-is-mathematically-inevitable-researchers-say](http://www.propublica.org/article/bias-in-criminal-risk-scores-is-mathematically-inevitable-researchers-say).

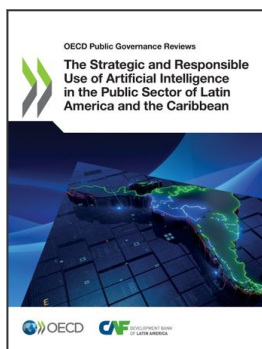
<sup>9</sup> <https://trends.oecd-opsi.org/trend-reports/public-provider-versus-big-brother>.

<sup>10</sup> The OECD Public Governance Directorate and its Regulatory Policy Division work to help governments achieve their missions through the use of regulations, laws and other instruments to deliver better social and economic outcomes and enhance the life of citizens and businesses. Their work can be found at <http://oecd.org/gov/regulatory-policy>.

<sup>11</sup> [www.transparency.org/en/news/political-integrity-lacking-in-latin-america-and-the-caribbean-especially-a](http://www.transparency.org/en/news/political-integrity-lacking-in-latin-america-and-the-caribbean-especially-a).

<sup>12</sup> [www.oecd.org/gov/ethics/recommendation-public-integrity](http://www.oecd.org/gov/ethics/recommendation-public-integrity).

<sup>13</sup> [www.caf.com/es/conocimiento/visiones/2018/08/el-alto-coste-del-abandono-escolar-en-america-latina](http://www.caf.com/es/conocimiento/visiones/2018/08/el-alto-coste-del-abandono-escolar-en-america-latina).



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