Comparing Policy Responses to COVID-19 among Countries in the Latin American and Caribbean (LAC) Region

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Introduction & Background

Latin America and the Caribbean (LAC) accounts for over a quarter of the world’s total cases, and a third of the total deaths, from the COVID-19 pandemic (1–3) (4). In the absence of a vaccine to prevent the transmission of the virus, LAC countries have introduced several public health, health system, and economic policies to reduce the spread and impacts of COVID-19 (4,5). However, contextual factors such as fragmented health systems, limited social safety nets, and high levels of informal employment and inequality have further challenged the response to the pandemic in many of these countries (4,6,7). Furthermore, these underlying conditions intensify the impact of COVID-19, particularly for the most disadvantaged, including the unemployed, informal, and low-income workers, many of whom live in overcrowded households (4,7).

In this study, we aim to describe policy interventions in 10 LAC countries in response to the COVID-19 pandemic, to compare these responses based on the experiences in two relatively high-performing jurisdictions—South Korea and Uruguay—and to support cross-jurisdictional policy learning for pandemic preparedness in the LAC region through knowledge exchange activities.

The selected LAC and comparator countries are diverse in their income levels, levels of economic and human development, and investments in their health systems. Figure 1 depicts government health expenditure per capita, human capital index (HCl), and income level category for the 12 countries in this study. These countries are diverse across all these indicators; therefore, the range of policy tools available to address this pandemic vary depending on the unique constraints and challenges faced in these countries.

**Figure 1.** Economic indicators in 11 selected LAC countries and South Korea.
*Sources: HCl data from 2020 (8), domestic general government health expenditure data from 2016 (9), income level data from 2016 (10).*
As shown in Figure 2, the COVID-19 pandemic has spread unevenly across the 11 selected LAC countries. Differences in the total cases and deaths reflect a combination of the economic and social context of the country and the range and effectiveness of public health interventions that were introduced. This variation also suggests that there are opportunities to strengthen the response and achieve better outcomes in this region.

**Figure 2. Cases and Deaths Across Countries.**

*Sources: Our World in Data (11); For country-level sources, refer to the individual country summaries in the Supplementary Materials.*
Methods

Study Population

We included 10 countries in the LAC region that are part of the World Bank COVID-19 Strategic Preparedness and Response Program. These include Argentina, Chile, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Panama, Paraguay, and Trinidad and Tobago. Two countries with evidence of having effectively managed the pandemic as of October 2020, Uruguay and South Korea were included as comparator countries.

Data Collection

A data collection template was developed in partnership with World Bank collaborators to describe three aspects of the COVID-19 response: (1) emergency preparedness and governance; (2) timeliness and stringency of COVID-19 measures; and (3) health sector responses. We collected the data between August 12 and August 30, 2020 using the Oxford COVID-19 Government Response Tracker database, each country’s government website, media releases, and Pan-American Health Organization (PAHO) COVID-19 Situation Reports. The full data collection template is available in Appendix A. Following data collection, we validated the information and results with World Bank managers and South Korean partners in all 12 countries. Country level reports supporting these cross-country analyses were shared with representatives of participating countries between November 9 and November 18, 2020.

Limitations

There are four main limitations to this analysis. First, data gathered after August 30, 2020 have not been captured unless otherwise stated. Given the evolving responses to the COVID-19 pandemic at the country level, there is a possibility that information may have changed since the time of writing. Second, due to time and information constraints, we focused our analysis on the introduction of the measures and not on how effectively they have been implemented and enforced. Third, some of the public health and economic indicators were summarized using a binary categorization (programs introduced vs. no measures). This approach may not reflect the comprehensiveness of programs introduced in some countries. Finally, contextual factors, the design of interventions, and effectiveness of implementation and enforcement were outside the scope of this study and warrant attention in future work.
Results: Cross-Country Analysis

1. Emergency Preparedness and Response Governance

Our review explored emergency preparedness activities undertaken by countries to plan for outbreaks of Severe Acute Respiratory Illnesses (SARI) or pandemics. In terms of pre-COVID-19 preparedness and COVID-19 response governance, most countries had comparable legislation regarding public health emergencies, pandemic preparedness plans, zoonotic disease monitoring, public health surveillance activities, and coordinating bodies to comparator countries. However, few had comparable existing stockpiles of personal protective equipment (PPE) pre-COVID.

Regarding institutional factors related to the governance of the COVID-19 response, there was similar leadership from the highest levels of government, including the creation of government-wide committees and funding allocated to the COVID-19 response across the included countries. A recent PAHO report also noted the presence of political leadership and intersectoral mechanisms for collaboration in the COVID-19 responses across the region (12). There was less information readily available across countries on the leadership roles of Chief Medical Officers of health or other top government scientific officials in the COVID-19 response. However, as noted by PAHO, governments should provide timely, trustworthy, and sensitive responses so the public is apprised of the government response and what they can and should do (12).

2. Timeliness and Stringency of COVID-19 Measures

The second component of our review explored 16 public health interventions to reduce the transmission of the virus (e.g., closure of public spaces), as well as economic measures to support the adoption of containment actions (e.g., debt relief and programs to aid housing and food security). We compared the stringency of the strictest interventions introduced and their timeliness in the 10 LAC countries relative to the comparators Uruguay and South Korea using an index date based on when that country reached 0.1 cases and 0.1 deaths per one million population.

The comparative exercise revealed several strengths in the response to COVID-19. As shown in Table 1, all the countries introduced measures as stringent as those in Uruguay and South Korea for many of the indicators assessed. However, most of the variation was observed in the timeliness of implementation of the strictest interventions. As depicted in Figure 3, most of the strictest containment measures were introduced around March 11, 2020, when the World Health Organization (WHO) declared the COVID-19 outbreak a pandemic (13). However, some economic relief measures were introduced after this date, and later than Uruguay and South Korea.

All 10 countries introduced their strictest closure measures (schools, workplaces, public events, and restrictions on internal movement) earlier than South Korea. For example, Honduras and Trinidad and Tobago introduced their strictest restrictions on internal movement about one month earlier than South Korea, and Haiti almost two months earlier. Only three of the countries introduced some of these measures earlier than, or at the same time as, Uruguay. Haiti and Guatemala introduced their strictest measures on closures of schools, workplaces, and public events at the same time as Uruguay, and the strictest measures on internal movement two weeks earlier. El Salvador also introduced strict measures on school closure and restrictions on internal movement about two weeks earlier than Uruguay.
However, 8 of the 10 countries introduced their strictest restrictions on gatherings earlier than South Korea. For example, Haiti and Honduras introduced this type of restriction about two months sooner. Haiti prohibited any gatherings, meeting, or activity of more than 10 people in both indoor or outdoor spaces. (14); while Honduras prohibited all gatherings regardless of number (15). Other countries imposed their strictest restrictions on gatherings later than the comparator countries. For example, Chile allowed meetings with a maximum of 50 people (mass events were suspended in their entirety) in cities that were not in quarantine (16,17); this was nearly one month after South Korea. In Ecuador, all indoor gatherings were prohibited in the most affected provinces, while in the rest of the provinces, gatherings were allowed with a maximum of 25 people (16–18). This was three months later than South Korea.

All 10 countries had more limited or delayed measures for income support than the comparator countries. For example, Chile introduced its income support measures about three months after the country reached 0.1 deaths per million population, including the Emergency Family Income (Ingreso Familiar de Emergencia), which provided temporary support for the most affected families by the pandemic. This was almost four months later than Uruguay and two months following South Korea. Panama introduced its income support measures about two months after the country reached 0.1 deaths per million population, including cash transfers (Panama Solidario) for those who lost their jobs due to the pandemic (6,19). This was two months later than Uruguay. Similar to Panama, Haiti introduced income support measures two months after the country reached 0.1 deaths per million population, including income support for employees in the textile sector (half of their monthly salary), cash transfers to families of 5 to 6 members, and special bonuses for nursing staff and the police (20).

Eight of the 10 countries introduced programs to support food security earlier or at the same time as Uruguay and South Korea. For example, Paraguay introduced these types of programs one week after the country reached 0.1 cases per million population, including programs to deliver food baskets to people affected by self-isolation, those who lost their jobs due to the pandemic, and indigenous communities, as well as cash transfers to aid purchasing of food (6,21,22). This was one week later than Uruguay and about one month earlier than South Korea. Panama introduced similar programs (cash transfers and delivery of food baskets (23), however this was two months later than Uruguay and one month later than South Korea. Another example is Chile, which, in addition to delivering food baskets, introduced an online platform that allows the public to review the price of basic food products and report price changes and out-of-stock products (24,25). This was about one month after Uruguay.

Half of the countries introduced delayed programs to support housing expenses, and some have not introduced such programs. For example, Chile introduced a program of this type nearly four months after the country reached 0.1 deaths per million population, including a lease subsidy for three months to cover up to 70% of the rental value for families experiencing a 30% or more drop in their incomes (no measures to support mortgages). This was about four months later than both Uruguay and South Korea. Trinidad and Tobago introduced a similar program one week after reaching 0.1 deaths per million population, which includes moratoriums on mortgage payments and support to pay rent for a period of up to six months (26–29). This was one week after Uruguay and a week before South Korea. El Salvador also introduced early programs including the suspension of mortgage payments (30,31). This was at the same time as Uruguay and one month earlier than South Korea. Guatemala, Haiti, and Honduras have not yet introduced such programs.

Eight of the 10 countries had more limited or delayed programs to support self-isolation than the comparator countries. For example, Argentina introduced programs to support self-isolation about two
months after the country reached 0.1 cases per million population, including the use of hotels and other centers to provide shelter to suspected and confirmed cases who cannot self-isolate at home (32–34). This was nearly two months later than Uruguay and South Korea. El Salvador introduced similar programs (shelters for repatriates or for those needing shelter to quarantine (23)) about one week earlier than Uruguay and South Korea. Also, Panama initiated similar programs as those in Uruguay and South Korea, including hotels and other facilities for COVID-19 patients who live in overcrowded conditions and have low-to-mild symptoms or who have compromised immune systems (23).

None of the countries introduced timely **programs to support citizen access to PPE**, and some have still not introduced such programs. For example, Trinidad and Tobago introduced these programs nearly one month after the country reached 0.1 cases per one million population, including the coordination with the NGO Foundation for the Enhancement & Enrichment of Life (FEEL) to deliver cloth face masks nationwide (35). This was about two months later than South Korea and one week after Uruguay. Honduras implemented measures such as freezing the prices of hygiene products (51,52) about one month later than South Korea and about two weeks following Uruguay. Ecuador and Paraguay have not yet introduced such programs.

It is important to note that there have been numerous media reports of the challenges faced by health systems in implementing the public health and economic measures in response to the pandemic. Although this was outside the scope of this study, Box 1 provides some examples of the challenges noted in multiple countries in this study.

**Box 1. Implementation challenges across LAC countries**

- Media reports of unsanitary conditions in quarantine centres, including overcrowded spaces and long waiting times for testing
- Disproportionate impact of measures experienced by Indigenous communities and other groups, including women, trans people, and the un/underemployed
- Waning public support for restrictive measures such as extended lock downs
- Human resources and equipment challenges (lack of personnel and burnout)
Table 1. Levels of stringency in the strictest measures adopted in the 10 LAC countries compared to Uruguay and South Korea

<table>
<thead>
<tr>
<th>Indicator code</th>
<th>LAC countries</th>
<th>Comparators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Argentina</td>
<td>Chile</td>
</tr>
<tr>
<td>M1 Schools</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M2 Workplace</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M3 Public events</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M4 Gatherings</td>
<td>High</td>
<td>Mod</td>
</tr>
<tr>
<td>M5 Transport</td>
<td>High</td>
<td>Mod</td>
</tr>
<tr>
<td>M6 Stay home</td>
<td>Mod</td>
<td>Mod</td>
</tr>
<tr>
<td>M7 Internal travel</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M8 Intl. travel restrictions</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M9 Public info</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M10 Income support</td>
<td>Mod</td>
<td>High</td>
</tr>
<tr>
<td>M11 Debt relief</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M12 Face coverings</td>
<td>Mod</td>
<td>High</td>
</tr>
<tr>
<td>M13 Food security</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M14 Housing expenses</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M15 Self-isolation</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M16 Access to PPE</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>

**Indicators code:** M1 = School closing; M2 = Workplace closing; M3 = Cancellation of public events; M4 = Recommendations on gatherings; M5 = Close public transport; M6 = Stay at home; M7 = Restrictions on internal movement; M8 = International travel restrictions; M9 = Public info campaigns; M10 = Income support; M11 = Debt/contract relief for households; M12 = Use of masks or face coverings; M13 = Programs to support food security; M14 = Programs to support housing expenses; M15 = Programs to support self-isolation for people in need of; M16 = Programs to support access to PPE in the general population

**Abbreviations:** NM = No measures; Mod = Moderate

**Sources:** For country-level sources, refer to the individual country summaries in Appendix B.
**Figure 3.** Timeline of implementation of policy measures in the 10 LAC countries compared to Uruguay and South Korea

Legend (as per the indicators code in Table 1):
- Closures (M1-8)
- Public Info. (M9)
- Economic Support (M10,11,13,14)
- Self-Isolation, PPE, Face Coverings (M12,15,16)

Sources: For country-level sources, refer to the individual country summaries in Appendix B.

Notes: There were measures in place for M8 before March 22. Restrictions for international travel from China were introduced on January 30, and five countries were added to list on February 27: South Korea, Italy, Iran, Japan, and Singapore. We also have two different dates for the introduction of M9: March 4 (source: Oxford COVID-19 Government Response Tracker database) and early February (source: Government informants).
3. Healthcare Sector Response: Test, Trace, and Treat

We also examined each country’s COVID-19 policies and practices using a test, trace, and treat framework. Comparator countries reportedly offered open public testing even for asymptomatic individuals. Few countries reviewed offered similar open public testing with most requiring symptoms or symptoms plus criteria such as exposure to a known case or travel history. The WHO recommends polymerase chain reaction (PCR) testing and, in areas with limited resources and testing capacity, prioritization of testing to groups at higher risk of developing severe complications, health workers and the first symptomatic individuals in closed settings such as schools, long-term care facilities or prisons (36). A recent PAHO report emphasizes the need to strengthen and maintain testing capacity throughout the region (12). Few countries we reviewed reported a comprehensive contact tracing policy for all cases. The WHO has emphasized throughout the pandemic the importance of contact tracing as a public health tool to breaking chains of transmission.

Health sector responses to treat those with COVID-19 were also explored (37). Similar to Uruguay, most countries increased the number of Intensive Care Unit (ICU) beds and ventilators since the start of the pandemic. Like comparator countries, all countries put policies in place to expand the healthcare workforce through retraining, early graduation of medical students, or facilitating certification of trained healthcare workers, amongst other measures. Likewise, all countries have taken steps to secure adequate PPE through purchasing, manufacturing, or donation. Our findings are summarized in Table 2, figure 4, Figure 5, and Figure 6.

Box 2. Testing and tracing: Examples from Uruguay*

- The first outbreak was traced to a wedding, where all guests were tested and those suspected of having COVID-19 were isolated within 24 hours. A similar approach was taken for subsequent initial outbreaks.
- Developed and domestically produced a COVID-19 PCR testing kit shared through a rapidly developed a network of 24 laboratories.
- Diagnostic capacity increased from 200 tests per day in March to nearly 1,000 per day by the end of May.
- Once community prevalence was low (<1%) Uruguay used pool PCR testing for efficiency and to screen specific populations such as teachers, medical staff, and in care homes.

* Taylor L. Uruguay is winning against covid-19. This is how. bmj. 2020 Sep 18;370.
<table>
<thead>
<tr>
<th>Indicator</th>
<th>Argentin a</th>
<th>Chile</th>
<th>Ecuador</th>
<th>El Salvador</th>
<th>Guatemala</th>
<th>Haiti</th>
<th>Honduras</th>
<th>Panama</th>
<th>Paraguay</th>
<th>Trinidad and Tobago</th>
<th>Comparators</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 National testing policy</td>
<td>Symptoms + criteria</td>
<td>Symptoms</td>
<td>Open public testing</td>
<td>Open public testing</td>
<td>Open public testing</td>
<td>Symptoms + criteria</td>
<td>Symptoms + criteria</td>
<td>Symptoms + criteria</td>
<td>Symptoms</td>
<td>Open public testing</td>
<td>Open public testing</td>
</tr>
<tr>
<td>3.2 Contact tracing policy</td>
<td>All cases</td>
<td>All cases</td>
<td>Limited</td>
<td>Limited</td>
<td>Limited</td>
<td>Limited</td>
<td>Limited</td>
<td>Limited</td>
<td>All cases</td>
<td>All cases</td>
<td>All cases</td>
</tr>
</tbody>
</table>
Figure 4 compares the total number of tests administered in each country for each detected cases. Panama and Chile have high numbers of cases, but also high numbers of tests administered. Our comparators South Korea and Uruguay have high values of tests per case—suggesting that their low case-counts cannot be attributed to low levels of testing. When we looked at testing rates per thousand people, we see a different pattern, with Chile having the highest rates, followed by Panama, then Uruguay, while South Korea’s rate of testing per thousand people puts it around the middle of the countries.

Figure 4: Comparison of Number of Tests per Case Across Countries

*Honduras data from October 9, Argentina/Haiti/Trinidad and Tobago data from November 1, rest of country data from October 31.

Sources: For country-level sources, refer to the individual country summaries in Appendix B.
Figure 5 shows the number of ventilators in each country per 100,000 people prior to the COVID-19 pandemic, and after—as measured by data collected in August 2020. Most countries that had data available show an increase in the number of ventilators available.

**Figure 5: Ventilator capacity pre-COVID-19 and current**

*Note:* Data incomplete for Ecuador and South Korea, for which only pre-COVID data is available. South Korea data point represents pre-COVID capacity. Data is unavailable for El Salvador and Guatemala.

*Sources:* For country-level sources, refer to the individual country summaries in Appendix B.
Figure 6, similar to Figure 5, shows ICU bed capacity in each of the countries prior to the COVID-19 pandemic, and after—as measured by data collected in August 2020. Similar to the number of ventilators, all countries either had an increase in the number of beds available or stayed the same.

Figure 6: ICU Bed Capacity Pre-COVID-19 and current

*Note:* Data incomplete for El Salvador and South Korea, for which only pre-COVID data is available. South Korea data point represents pre-COVID capacity.

*Sources:* For country-level sources, refer to the individual country summaries in Appendix B.
Conclusion

This study describes the policy interventions in 10 LAC countries in response to the COVID-19 pandemic and compares these responses based on the experiences in South Korea and Uruguay with the aim of supporting cross-jurisdictional policy learning for pandemic preparedness in the LAC region. We identified five key country responses that could improve the outcomes of COVID-19 and the preparedness for future pandemics in countries in the LAC region.

1. Ensure an adequate supply, and effective distribution of, personal protective equipment (PPE)

While ensuring an adequate supply of PPE is widely acknowledged to be vital to the pandemic response, ongoing effort and attention is required for its use in testing, contact tracing, and vaccine administration efforts in the coming months. The comparator countries provide some insights into effective approaches to secure and maintain PPE. To maintain supply and prices, Uruguay publishes a weekly list of the minimum, maximum, and average price of basic hygiene products. Uruguay also monitors the stock of hygiene supplies, and has agreements with merchants, producers, and intermediaries to maintain the posted prices. At a critical time, South Korea penalized hoarding that restricted residents to acquire a maximum of two masks per person per week on designated days.

There are also examples of promising practices within the 10 study countries. For frontline healthcare workers, Chile invited suppliers to provide information on availability of stocks of N95 masks, hand sanitizers, disposable gowns, thermometers, and other materials through the ChileCompra website. For the general population Haiti delivered face masks to confirmed or suspected cases while Honduras delivered masks and froze supply prices. Argentina fixed a maximum price for supplies (masks, hand sanitizers), and Trinidad and Tobago collaborated with NGOs to distribute free cloth masks to the population.

2. Allocate resources strategically to emphasize prevention and to shift to lower-cost interventions where possible

Strategic resource allocation, and balancing short-term treatment needs with longer-term prevention, is critical. Comparator countries emphasized lower-cost preventive measures and interventions. Uruguay invested in preventive measures, testing and contact tracing, and employed pool testing rather than individual samples once community prevalence was low. During the initial outbreak in Daegu, South Korea, health officials developed and used a Brief Severity Scoring System to triage patients to community quarantine centres, community hospitals, or tertiary hospitals. The 10 LAC study countries also offer promising insights on resource allocation. In Ecuador, resources were strategically targeted to medical care stations in hot spot neighborhoods to reduce pressure on hospitals and ICU facilities. In Paraguay a new laboratory was built to increase lab capacity to support their policy of asymptomatic testing for those in high burden areas. Trinidad and Tobago created a “parallel system” using both private and public sector resources to establish a network of lower-cost facilities for step-down services and state-run quarantining related to COVID-19.
3. **Support adherence to public health interventions with needed safety net measures**

Emergency social safety net measures can be put in place to better enable individuals to adhere to public health measures that require physical distancing and quarantine or self-isolation. These measures include support for income, housing, food security, protection of vulnerable populations, and supports for quarantine and self-isolation.

Comparator countries offer promising examples of income supports. South Korea offered emergency relief payments to households in the bottom 70 percent income bracket, subsidies for freelancers and self-employed workers on unpaid leave, and zero-interest loans for affected construction workers. In Uruguay, measures were introduced allowing increased flexibility to use unemployment insurance (allowing individuals to use it for partial stoppage of their employment activities), as well as deferral of installments on loans. Uruguay also offered rent subsidies for individuals enrolled in unemployment insurance and flexible agreements on mortgage payments.

There were positive examples from the 10 LAC study countries. Honduras offered deferral of loan repayment installments, moratoriums for tax payments, and prohibited the suspension of phone or internet service due late payments. Trinidad and Tobago created a Salary Relief Grant to people who lost their income due to COVID-19, as well as deferral of loan repayments, reduction of interest rates of credit cards.

Comparator countries also provide insight on housing support measures. In South Korea financial support was offered to landlords who reduced rental fees for housing and commercial tenants (consumption vouchers and tax exemptions). From our study countries, Trinidad and Tobago introduced moratoriums on mortgage payments and rent support for a period of up to six months, while Honduras increased its budget to reactivate the construction industry in the housing sector for middle class housing, and other supports for entrepreneurs.

Measures to support food security in comparator countries included a program in Uruguay that delivered food cards and food baskets, increased the amount of food in food banks, and monitoring and freezing of prices for the food provided in the basic basket. Examples from study countries include Honduras freezing the prices of products in its own basic food basket until the end of the emergency. Trinidad and Tobago offered cash transfers for food support.

To support vulnerable populations Uruguay allocated additional funds to create new shelters for people living in a street situation and extend the stay hours in the existing shelters. To ensure individuals had the ability to self-isolate, South Korea provided free care packages (basic foods, toiletries, and essentials for two weeks), as well as creating isolation centers for inbound travelers and those who cannot self-isolate at home. Trinidad and Tobago also created isolation centers for healthcare workers and nationals entering the country. In El Salvador programs to support self-isolation include the use of hotels and other existing facilities for quarantine of repatriates.

4. **Ensure appropriate measures for testing and tracing**

Testing and contact tracing are central components of the COVID-19 response both now and looking ahead to vaccine delivery. Comparator countries offer insights towards operating testing systems at scale:
South Korea opened 600 testing centres, including drive through testing centres, while Uruguay invested in local production of test kits, offered testing at home, and random community testing in areas with outbreaks. Other study countries also offer promising examples. In Guatemala, shopkeepers in outbreak areas are tested to inform health officials on community spread, as well as the creation of community detection and screening sites using telemedicine at temporary testing sites. Haiti has increased testing at its points of entry, particularly in border areas. In Honduras, community testing is carried out through "medical brigades" for screening and testing. In Paraguay, testing centres have been set up on two major motorways to increase community access to testing.

In the comparator countries, contact tracing strategies complement testing approaches. In South Korea, epidemic Intelligence Surveillance officers are permitted to draw on data sources including facility visits, credit card transaction logs, cellular GPS data, and CCTV, and to make patient trajectories public. In Uruguay, the government put resources into creating fully staffed, equipped, and ready-to-be-deployed contact tracing task forces from the earliest stages of the pandemic—the first case was fully contact traced with all contacts tested and isolated. Study countries offer further insights into contact tracing. In Argentina, the Detector program includes house-to-house searches for possible cases and contacts. El Salvador, Panama, and Honduras established “Epidemiological Fences” in areas with higher numbers of cases. In Paraguay, close contacts of confirmed COVID-19 cases are not tested but are automatically considered positive cases.

5. Strengthen the scientific leadership and clear communication with the general public

An effective COVID-19 response requires scientific leadership both to inform and justify government decisions and to provide clear communication to the public to maintain its support and adherence over extended time periods. Having a consistent, identifiable, and trusted scientific voice can help ensure that public health measures, and their associated rationales, are communicated accurately and effectively. This may become increasingly important with the ongoing need for additional testing and tracing, as well as the calibrated closing and reopening measures and triaged vaccination initiatives in the months to come.

In Uruguay, the director general of health advises the minister of Public Health and the council of ministers on COVID-19 matters. In Paraguay, the director of Health Surveillance provides scientific leadership, and in Honduras this role is filled by the head of the Health Surveillance unit at the ministry of health. In Trinidad and Tobago, the chief medical officer and the head of the thoracic medical director advise the prime minister and other senior officials who are responsible for implementing the COVID-19 response plan.
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Appendix A. Data Collection Template

1. Emergency Preparedness and Response Governance

### 1.1 Emergency Preparedness

<table>
<thead>
<tr>
<th>Domain</th>
<th>Indicator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Governance</td>
<td>1. Were there existing national pandemic management policies and legislation?</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td>2. Were there existing national influenza/severe acute respiratory infections (SARI) pandemic preparedness plans?</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td>3. Was there an existing national One Health coordinating body?</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Capacities</td>
<td>4. Were there pandemic surveillance systems in place for public health including influenza/SARIs?</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td>5. Were there pandemic surveillance systems in place for animal health focusing on emerging zoonotic disease?</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Resources</td>
<td>6. Was domestic funding already committed to pandemic preparedness?</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td>7. Were teams of experts in respiratory pandemic preparedness previously established and maintained?</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td>8. Was there a national stockpile of PPE?</td>
<td>Yes/No</td>
</tr>
</tbody>
</table>

Note: These questions are adapted from the WHO framework for Emergency Preparedness (12)

### 1.2 COVID-19 Response Governance

<table>
<thead>
<tr>
<th>Domain</th>
<th>Indicator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership</td>
<td>2. Has the president or prime minister taken a lead role in the national COVID-19 response</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td>If No then who [description]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Has a government-wide committee or task force been established as part of the COVID-19 response?</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td>[Description - (note which actors or organizations included, and sectors represented)]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Is the Chief Medical Officer of Health (or equivalent) a key actor in direction setting?</td>
<td>Yes/No</td>
</tr>
<tr>
<td></td>
<td>5. Are COVID-19 response decision making structures centralized or decentralized?</td>
<td>Yes/No</td>
</tr>
</tbody>
</table>
2. Timeliness and Stringency of COVID-19 Measures

Stringency of measures

For this section, we captured the most stringent measures of 16 government interventions. We assessed 11 out of the 17 indicators proposed by the Oxford COVID-19 Government Response Tracker (OxCGRT), we also included five more indicators proposed by our team. All the indicators were coded based on the stringency of the measure and recorded in an Excel spreadsheet. We also recorded the date when the strictest intervention for each of the indicators was introduced. The tables below show the definition and categorization of the indicators assessed.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Description</th>
</tr>
</thead>
</table>
| M1 School closing | Record closings of schools and universities  
0= no measures  
1= recommend closing – non-mandatory  
2= require closing only at some levels  
3= mandatory closing |
| M2 Workplace closing | Record closing workplaces  
0= no measure  
1= non-mandatory  
2= mandatory some sectors  
3= mandatory closing all-but-essential |
| M3 Cancellation of public events | Record cancelling public events  
0= no measure  
1= recommend cancelling  
2= required cancelling |
| M4 Recommendations on gatherings | Record the cut-off size of gatherings restrictions  
0= no measure  
1= Restrictions on very large gatherings (the limit is above 1000 people)  
2= Restrictions on gatherings between 101-1000 people  
3= Restrictions on gatherings between 11-100 people  
4= Restrictions on gatherings of 10 people or less |
| M5 Close public transport | Record closing of public transport  
0= no measure  
1= non-mandatory closing, e.g. reduced volume  
2= mandatory closing of prohibit most citizen to use it |
| M6 Stay at home | Record orders to “shelter-in- place” and otherwise confine to home  
0= no measure  
1= non-mandatory  
2= mandatory with exceptions for daily exercise, grocery shopping, and ‘essential’ trips  
3= mandatory with minimal exceptions, e.g. allowed to leave only once a week, or only one person can leave at a time, etc. |
| M7 Restrictions on internal movement | Record restrictions on internal movement/trips  
0= no measures  
1= Recommend not to travel between regions/cities  
2= internal movement restrictions in place |
| M8 | International travel restrictions | Record restrictions on international travel  
0= No measures  
1= screening  
2= quarantine arrivals from high-risk regions  
3= ban of arrivals from some regions  
4= ban on all regions or total border closure |
| M9 | Public info campaigns | Record presence of public info campaigns  
0= no measure  
1= public officials urging caution about COVID-19  
2= coordinated public information campaign (e.g. across traditional and social media) |
| M10 | Income support | Record if the government is covering the salaries or providing direct cash payments, universal basic income, or similar, of people who lose their jobs or cannot work. Includes payments to firms if explicitly linked to payroll/ salaries  
0= No income support  
1= government is replacing less than 50% of lost salary (or if a flat sum, it is less than 50% median salary)  
2= government is replacing 50% or more of lost salary (or if a flat sum, it is greater than 50% median salary) |
| M11 | Debt/contract relief for households | Record if government is freezing financial obligations (e.g. stopping loan repayments, preventing services like water from stopping, or banning evictions)  
1 - Narrow relief, specific to one kind of contract  
2 - broad debt/contract relief |

### NAO SUGGESTED INDICATORS

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Description</th>
</tr>
</thead>
</table>
| M12 | Use of masks or face coverings  
Record policies to use face masks or other type of coverings  
0= no measures  
1= use of face mask or coverings is optional  
2= face mask or coverings are mandatory in public transport only  
3= face mask or coverings are mandatory in all indoor public spaces |
| M13 | Programs to support food security  
Record if government is implementing programs to support food security, e.g. donation of food baskets or food vouchers, reduction of prices or taxes on food  
0= No measures  
1= Yes |
| M14 | Programs to support housing expenses  
Record if the government is implementing programs to relief housing expenses, e.g. allow tenants to delay rent payments to their landlords, loans for housing expenses  
0= No measures  
1= Yes |
| M15 | Programs to support self-isolation for people in need of  
Record if the government is implementing programs to facilitate housing to help control the spread of the virus, e.g. temporary housing for expatriate workers, supplementary housing for vulnerable households  
0= no measures  
1= Yes |
Programs to support access of personal protection equipment (PPE) in the general population

<table>
<thead>
<tr>
<th>M16</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programs to support access of personal protection equipment (PPE) in the general population</td>
<td>Record if the government is implementing programs to support the general population to access PPE, e.g. distribution of face masks, hand sanitizer, and other sanitary supplies</td>
</tr>
<tr>
<td></td>
<td>0= no measures</td>
</tr>
<tr>
<td></td>
<td>1= Yes</td>
</tr>
</tbody>
</table>

After categorizing the interventions, we estimated a score of stringency for each indicator as per the OxCGRT (38), with a few changes. Briefly, we divided the stringency code by the maximum value the indicator can have (to have scores from 1 to 100) and penalized measures that were introduced in some areas only instead of nationwide. We assigned zero to indicators without measures.

**Timeliness of measures**

We compared the timeliness (time to implement measures) for each of the indicators assessed. To do so, we defined the beginning of the epidemic with two dates. One date, as suggested by Cardenaz-Mauricio and Martinez-Humberto (2020) (39), is when each country reached 0.1 daily deaths per 1 million inhabitants. The second date is when each country reached 0.1 daily cases per 1 million inhabitants. The source for this data was the dataset Coronavirus Pandemic (COVID-19). To estimate the timeliness of measures we followed the approach below:

a. Time for response: Time (in days) between the beginning of the epidemic and the date when each country implemented their most stringent measure
b. Compare the time for response, by indicator, between countries in relation to South Korea and Uruguay

### 3. Healthcare Sector Responses

We will collect information on healthcare sector response to COVID-19 using indicators and descriptors within a “Test, Trace and Treat” framework. The ‘Test’ section will explore testing policies, outcomes and capacities; the ‘Trace’ section will report on contact tracing policies and other mechanisms for contact tracing; the ‘Treat’ section will report on healthcare sector capacity and resources. The final set of included indicators will depend on data availability.

<table>
<thead>
<tr>
<th>TEST</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Indicators</strong></td>
</tr>
</tbody>
</table>
| National testing policy | [1] No testing policy  
|                      | [2] Those with symptoms AND meet criteria (e.g. case contacts, healthcare workers, admitted to hospital, travel history)  
|                      | [3] Anyone with symptoms  
|                      | [4] Open public testing (incl. asymptomatic)  |
| Tests per confirmed case | Number of tests performed per new confirmed COVID-19 case (higher number of tests per cases found = better response, e.g. Vietnam = 9,000+ tests/confirmed case; Colombia = 3.6 tests/confirmed case) (since beginning of pandemic as defined above until end July 2020) |
| Description of screening and testing measures | Description of any measures to increase testing capacity - e.g. dedicated testing facilities, testing in primary care, “drive-thru” testing, community testing etc |
| Number of institutions with lab capacity to process COVID-19 tests | # of institutions with lab facilities able to process COVID-19 tests as of end July 2020 |
| Number of screening centres to administer COVID-19 tests | # of centres able to collect samples for COVID-19 testing as of end July 2020 |

### TRACE (AND IDENTIFY)

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Description</th>
</tr>
</thead>
</table>
| Contact tracing policy | [1] No tracing  
[2] Limited tracing (Only in some cases)  
[3] Comprehensive tracing (All cases without exception) |
| Contract tracing strategy | [1] Case identification and isolation  
- *Symptomatic cases of COVID-19 are rapidly identified within the community and effectively isolated - no contact tracing*  
[2] Case identification and isolation + contact tracing  
- *Symptomatic cases of COVID-19 are rapidly identified within the community and effectively isolated. Contacts of cases are identified and asked to self-monitor for symptoms and to self-report and isolate if they become symptomatic.*  
[3] Case identification and isolation + contact tracing + monitoring and quarantine  
- *Symptomatic cases of COVID-19 are rapidly identified within the community and effectively isolated. Contacts of cases are identified, quarantined, and monitored through daily phone calls for 14 days, as selected by the jurisdiction. If contacts become symptomatic, they are re-designated as cases.* |
| Other policies or contract tracing mechanisms | Description of relevant policies or mechanisms to facilitate contact tracing (e.g. using digital technologies, increasing public health workforce, etc) |

### TREAT

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily outpatient visits</td>
<td># of outpatient visits in January 2020 to latest available or July 2020</td>
</tr>
<tr>
<td>Existing ICU capacity</td>
<td>ICU beds total 2018/2019; ICU beds per capita</td>
</tr>
<tr>
<td>Current ICU capacity</td>
<td>ICU beds total (as of end July 2020); ICU beds per capita</td>
</tr>
<tr>
<td>Current ICU occupation rate</td>
<td>ICU bed occupancy as of end July 2020</td>
</tr>
<tr>
<td>Category</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Existing ventilator capacity</td>
<td>Ventilators total; ventilators per capita 2018/2019</td>
</tr>
<tr>
<td>Current ventilator capacity</td>
<td>Ventilators total as of end July 2020</td>
</tr>
<tr>
<td>COVID-19 ICU &amp; ventilator adaptations</td>
<td>Description of any measures to increase ICU &amp; ventilator capacity - converting wards, building new ICU wards, field hospitals, repurposing of facilities etc.</td>
</tr>
<tr>
<td>Existing doctors</td>
<td>Overall number; practicing per 1000 population</td>
</tr>
<tr>
<td>Existing nurses</td>
<td>Overall number; practicing per 1000 population</td>
</tr>
<tr>
<td>COVID-19 health workforce adaptations</td>
<td>Description of any measures to increase workforce - early graduation for medical/nursing students; re-licensing of retired/non-practicing healthcare workers, etc.</td>
</tr>
<tr>
<td>Personal Protective Equipment Supply</td>
<td>Description of</td>
</tr>
<tr>
<td></td>
<td>● PPE availability</td>
</tr>
<tr>
<td></td>
<td>● Any COVID-19-related adaptations (guidelines to re-using masks etc)</td>
</tr>
<tr>
<td></td>
<td>● Domestic production measures (if any)</td>
</tr>
</tbody>
</table>
Appendix B. Country Summaries

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ARGENTINA

Country Background

Argentina registered its first confirmed case of COVID-19 on March 3, 2020 – a recent traveler to Europe (1). As a result of the declaration of COVID-19 as a pandemic by the World Health Organization, the president of Argentina decreed a state of emergency for a year on March 12 (2). Argentina established five isolation management phases, the fourth phase consists of a progressive reopening in which provincial governments decide their reopening strategy and date after authorization from the national government (3).

On May 8, the President of Argentina announced that all provinces were entering the re-opening phase except for Buenos Aires and its suburbs depending on epidemiologic parameters (4). Buenos Aires announced its six-stage reopening strategy on July 17, in which specific sectors are allowed to reopen in each stage (5,6). Table 1 shows the total number of confirmed cases and deaths per 100,000 inhabitants in Argentina compared to Uruguay and South Korea, as of November 1, 2020. Figure 1 shows the average of daily new cases and deaths in Argentina by epidemiological week, as of November 1, 2020.

Table 1. Total number of confirmed cases and deaths per 100,000 inhabitants in Argentina compared to Uruguay and South Korea, as of November 1, 2020

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Argentina</th>
<th>Uruguay</th>
<th>South Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of confirmed cases per 100,000</td>
<td>2582</td>
<td>90</td>
<td>52</td>
</tr>
<tr>
<td>Total number of confirmed deaths per 100,000</td>
<td>69</td>
<td>1.7</td>
<td>0.91</td>
</tr>
</tbody>
</table>

Source: Our World in Data (7).

Figure 1. Average of daily new cases and deaths in Argentina by epidemiological week, as of November 1, 2020.

Source: Data from Our World in Data, Coronavirus Pandemic (COVID-19) (7). Note: We considered December 29, 2019, to January 4, 2020, as the first epidemiological week and we only considered confirmed deaths due to COVID-19 (8).
1. Emergency Preparedness and Response Governance

1.1 Emergency Preparedness

As shown in Table 2, emergency preparedness in Argentina is comparable to both Uruguay and South Korea.

Table 2. Emergency preparedness indicators

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Argentina</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Existing legislation</td>
<td>National health emergency policies and legislations outline measures during outbreaks (9).</td>
<td>The <em>Infectious Disease Control and Prevention Act</em> and the <em>Quarantine Act</em> establishes mandatory disease notification and quarantine measures (10), as well as the <em>Fundamental Act</em> on National Crisis Management, which includes the Disaster Management Standards Manual, the Crisis Response Manual, and the Situation Action Manual (11).</td>
<td>Law No. 9,202 establishes the measures necessary to maintain collective health (12,13) and Decree No.41/012 establishes mandatory disease notification including outbreak events.</td>
</tr>
<tr>
<td>1.3</td>
<td>Existing One Health or zoonotic coordination</td>
<td>Yes, SINAGIR (Sistema Nacional para la Gestión Integral de Riesgo y la Protección Civil) 2017 (17).</td>
<td>Korea Disease Control and Prevention Agency (KDCA): Division of Zoonotic and Vector Borne Disease Control (18).</td>
<td>National integrated preparedness plan for an influenza pandemic describes intersectoral integration between the Ministries of Public Health and Livestock at the central and departmental level (19).</td>
</tr>
<tr>
<td>1.4</td>
<td>Pandemic surveillance systems (human health)</td>
<td>National Health Surveillance System (SNVS) is a linked network of 8 sentinel hospitals, 10 centres and 24 laboratories connected to 3 national influenza centres (20,21).</td>
<td>Korea Influenza and Respiratory Virus Surveillance System (KINRESS); Clinical sentinel surveillance in 200 outpatient clinics; 52 laboratory sentinel surveillance sites; 207 hospitals conduct</td>
<td>Health Surveillance Department (DEVISA); National Emergency System (SINAEC); National Integrated Health System (SNIIS) (23); SARI surveillance at 6 sentinel centres; IT system for hospital infection surveillance and influenza-like-</td>
</tr>
<tr>
<td>Section</td>
<td>Description</td>
<td>Details</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
<td>---------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>Pandemic surveillance systems (animal health)</td>
<td>Through National Service of Health and Food Quality (SENASA) (25). National Institute of Health - Centre for Infectious Disease Research (Division of Bacterial Disease Research, or Division of Emerging Infectious Disease and Vector Research) and emergency coordination for zoonotic disease in coordination with the Ministry of Agriculture, Food, and Rural Affairs (26). National Animal Health Emergency System (SINEASA) (27).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.6</td>
<td>Teams of experts in SARI/influenza or emerging infectious diseases</td>
<td>Yes - Comprised of National Directorate of Epidemiology and Analysis of the Health Situation, the Directorate of Maternity and Childhood, the National Reference Laboratory of Respiratory Viruses of the INEI-ANLIS, and the Directorate for the Control of Immunopreventable Diseases (15). Yes – for emerging infectious diseases and for public health emergency preparedness response through the KDCA (18). Emergency Operational Committee convened a commission of national technical experts for pandemic influenzas including clinicians, academics, virologists, and epidemiologists (19).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.7</td>
<td>National PPE stockpile</td>
<td>Yes – however exact numbers unknown as stocks were decentralized and held in provinces and hospitals (28). Yes – Following the 2015 MERS outbreak, changes were introduced to adopt a more dynamic stockpiling approach with a system for real time stockpiling management currently under implementation as well as a 5-year National Strategic Stockpile. Yes – The Administration of the State Health Services (ASSE) and Ministry of Public Health purchased PPE, centralized stock, and ensured distribution to both the public and private sectors (19).</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 1.2 COVID-19 Response Governance

The COVID-19 response in Argentina has featured leadership from the highest levels of government. As with Uruguay, Argentina has had scientific leadership from a top health official. Similar to Uruguay, decision making on the pandemic response is centralized, however provincial governments are responsible for policy implementation.

**Table 3. COVID-19 response governance indicators**

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Argentina</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.8</td>
<td>President/Prime Minister leadership</td>
<td>Yes – The president has played a central role (29).</td>
<td>Yes – The president and prime minister have both played central roles.</td>
<td>Yes – The president has been a central figure in the response and has held regular press conferences to communicate the government's approach (&quot;Prevent, react, control&quot;) (30–33).</td>
</tr>
<tr>
<td>1.9</td>
<td>Establishment of taskforce or government-wide committee</td>
<td>Inter-ministerial meetings held but it is unclear as to frequency and composition; scientific taskforce and advisory board created (34,35).</td>
<td>Yes – Using existing public health emergency response structures which activated high-level national response protocols to ensure a cross-society and pan-governmental approach including the prime minister, the Ministry of the Interior and Safety, Ministry of Health and Welfare, Government Office for Policy, and the National Security Council (26).</td>
<td>Yes – Departmental Coordination Centers of Emergencies (Cecoed) that form part of the Departmental Emergency Committee (CDE) (36); comprised of representatives of the Departmental Administration, the Ministry of Social Development, the Ministry of National Defense, the National Fire Department, the National Police, and the Ministry of Public Health (37).</td>
</tr>
<tr>
<td>1.10</td>
<td>Leadership from Chief Medical Officer of Health or another top scientific official</td>
<td>Yes – Health Access Secretary (38).</td>
<td>Yes (39).</td>
<td>Yes – Director General of Health advises the Minister of Public Health and the council of ministers of COVID-19 matters (40,41).</td>
</tr>
<tr>
<td>1.11</td>
<td>Pandemic funding</td>
<td>Yes – On March 10, the president announced a reallocation of funds to assign and additional AR$ 1,700 million (US$ 26 million) to the health emergency response (42).</td>
<td>Yes – 4 stages of fiscal measures beginning with immediate support for preventive and medical services, small merchants and small-to-medium enterprises, and financial support for individuals quarantined/self-quarantined (43,44).</td>
<td>Yes – COVID solidarity fund (45).</td>
</tr>
<tr>
<td>1.12</td>
<td>Level of Government that decides policy</td>
<td>Central – The Decree 260/2020 empowers the National Ministry of Health to coordinate actions in the framework of the health emergency (46).</td>
<td>Mixed – Horizontal coordination at the strategic level facilitated through the Central Safety Management Committee chaired by the Prime Minister; Ministry of Interior and Safety Public Health Disaster Response Division coordinated closely with Ministry of Health and Welfare (26).</td>
<td>Central – The President of the Republic is advised by an Honorary Scientific Advisory Group (GACH) (47); It is the responsibility of the Ministry of Public Health (MSP) (40,48) to lead the national response, carry out risk assessments, and define the need to convene other organizations for the multisectoral response.</td>
</tr>
<tr>
<td>1.13</td>
<td>Level of Government that implements policy</td>
<td>Provincial – Provincial governments are responsible for the implementation of the actions in their jurisdictions (28).</td>
<td>Mixed – Central government along with provincial and local governments implement the infectious disease prevention and control policy, together with a network of 256 Public Health Centers and medical institutions (26,49).</td>
<td>Central (40,50).</td>
</tr>
</tbody>
</table>
2. Timely Implementation of Effective Interventions to Prevent the Spread of COVID-19

For most of the indicators assessed, stringency was as high in Argentina as Uruguay and South Korea. However, as depicted in the figures 2A and 2B, the timeliness of implementation lagged in Argentina relative in 10 out of 16 interventions compared to Uruguay, and three compared to South Korea.

- Argentina introduced programs to support self-isolation about two months after the country reached 0.1 cases per one million population, including the use of hotels and other centres to provide shelter to suspected and confirmed cases who cannot self-isolate at home (51–53). This was nearly two months later than Uruguay and South Korea.
- Argentina introduced programs to support access to personal protective equipment (PPE) in the general population nearly two weeks after the country reached 0.1 cases per one million population, including freezing the prices of alcohol-based hand sanitizers and face masks nationwide, and setting a maximum price for these supplies (54). This was about one month later than South Korea.
- However, Argentina introduced its public information campaigns around one month before the country reached 0.1 cases per one million population, a month earlier than Uruguay and South Korea. In addition, Argentina introduced its strictest measures on face coverings about five months earlier than South Korea.

The following is a measure taken in Uruguay to increase the use of face masks that could be considered in strengthening the COVID-19 response in Argentina:

- Uruguay made wearing face masks and coverings in public spaces mandatory nationwide (55). Although face coverings are recommended in Argentina, they are only mandatory for public transport and in public spaces in some areas such as the city of Buenos Aires and Buenos Aires Province (56–59).
Table 4. Stringency levels in the strictest interventions in Argentina compared to Uruguay and South Korea

<table>
<thead>
<tr>
<th>Indicator code</th>
<th>Indicator</th>
<th>LAC country</th>
<th>Comparators</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1</td>
<td>School closing</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M2</td>
<td>Workplace closing</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>M3</td>
<td>Cancellation of public events</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M4</td>
<td>Recommendations on gatherings</td>
<td>High</td>
<td>No measures</td>
</tr>
<tr>
<td>M5</td>
<td>Close public transport</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>M6</td>
<td>Stay at home</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>M7</td>
<td>Restrictions on internal movement</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M8</td>
<td>International travel restrictions</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M9</td>
<td>Public info campaigns</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M10</td>
<td>Income support</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>M11</td>
<td>Debt/contract relief for households</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M12</td>
<td>Use of masks or face coverings</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>M13</td>
<td>Programs to support food security</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M14</td>
<td>Programs to support housing expenses</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M15</td>
<td>Programs to support self-isolation</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M16</td>
<td>Programs to support access to PPE in the</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>general population</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: PPE = personal protective equipment

Sources: Argentina: M1 (60), M2 (61), M3 (62,63), M4 (61), M5 (64), M6 (61), M7 (61), M8 (65), M9 (66), M10 (67), M11 (68–70), M12 (56,57), M13 (54,71–73), M14 (74), M15 (75), M16 (54). Uruguay: M1 (76), M2 (77), M3 (77), M5 (78), M6 (77), M7 (77), M8 (77,79,80), M9 (66), M10 (77), M11 (77), M12 (55), M13 (77), M14 (81,82), M15 (77), M16 (77). South Korea: M1 (83,84), M2 (85), M3 (86), M4 (87), M6 (88), M7 (88), M8 (89), M9 (66), M10 (90), M11 (91), M12 (92), M13 (93), M14 (44,94), M15 (95,96), M16 (97)
Figure 2A. Timeline of the introduction of measures in Argentina compared to Uruguay

**Indicators code:**  
M1 = School closing; M2 = Workplace closing; M3 = Cancellation of public events; M4 = Recommendations on gatherings; M5 = Close public transport; M6 = Stay at home; M7 = Restrictions on internal movement; M8 = International travel restrictions; M9 = Public info campaigns; M10 = Income support; M11 = Debt/contract relief for households; M12 = Use of masks or face coverings; M13 = Programs to support food security; M14 = Programs to support self-isolation for people in need of; M15 = Programs to support access to personal protection equipment in the general population;

**Stringency:**  
High, Moderate, Low

**Benchmark Dates:**  
Date case benchmark reached (0.1 cases per 1 million inhabitants), Date death benchmark reached (0.1 deaths per 1 million inhabitants)

**Sources:**  
**Argentina:** M1 (60), M2 (61), M3 (62,63), M4 (61), M5 (64), M6 (61), M7 (61), M8 (65), M9 (66), M10 (67), M11 (68–70), M12 (56,57), M13 (54,71–73), M14 (74), M15 (75), M16 (54).  
**Uruguay:** M1 (76), M2 (77), M3 (77), M5 (78), M6 (77), M7 (77), M8 (77,79,80), M9 (66), M10 (77), M11 (77), M12 (55), M13 (77), M14 (81,82), M15 (77), M16 (77).
Figure 2B. Timeline of the introduction of measures in Argentina compared to South Korea

**Indicators code:** M1= School closing; M2= Workplace closing; M3= Cancellation of public events; M4= Recommendations on gatherings; M5= Close public transport; M6= Stay at home; M7= Restrictions on internal movement; M8= International travel restrictions; M9= Public info campaigns; M10= Income support; M11= Debt/contract relief for households; M12= Use of masks or face coverings; M13= Programs to support food security; M14= Programs to support housing expenses; M15= Programs to support self-isolation for people in need; M16= Programs to support access to personal protection equipment in the general population.

**Abbreviations:** FC= First confirmed case of COVID-19; FD= First confirmed death of COVID-19

**Stringency:** High, Moderate, Low

**Benchmark Dates:** Date case benchmark reached (0.1 cases per 1 million inhabitants) • Date death benchmark reached (0.1 deaths per 1 million inhabitants)

**Sources:** Argentina: M1 (60), M2 (61), M3 (62,63), M4 (61), M5 (64), M6 (61), M7 (61), M8 (65), M9 (66), M10 (67), M11 (68–70), M12 (56,57), M13 (54,71–73), M14 (74), M15 (75), M16 (54). South Korea: M1 (83,84), M2 (85), M3 (86), M4 (87), M5 (88), M6 (88), M7 (88), M8 (89), M9 (66), M10 (90), M11 (91), M12 (92), M13 (93), M14 (44,94), M15 (95,96), M16 (97)
3. Healthcare Sector Responses

3.1 Test

Argentina offers testing only for those with COVID-19 symptoms and those who meet specific exposure criteria unlike the open public testing policies in the two comparator countries. Argentina reports 2.16 tests per confirmed case, representing a larger burden of COVID-19 in the community than in South Korea and Uruguay. However, compared to Uruguay, Argentina has more institutions with lab capacity to process COVID-19 tests. In addition, Argentina has implemented the ‘Detectar’ program which involves house-to-house searching for possible cases and contacts.

Table 5. Screening and testing measures

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Argentina</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>National Testing Policy</td>
<td>Those with symptoms AND meet criteria (e.g. case contacts, healthcare workers, admitted to hospital, travel history) (98).</td>
<td>Open public testing (incl. asymptomatic) (98).</td>
<td>Open public testing (incl. asymptomatic) (98).</td>
</tr>
<tr>
<td>3.2</td>
<td>Tests per confirmed case</td>
<td>2.16 (99)</td>
<td>209.1 (98)</td>
<td>136.9 (100)</td>
</tr>
<tr>
<td>3.3</td>
<td>Institutions with lab capacity to process COVID-19 tests</td>
<td>36 (101)</td>
<td>96 (102)</td>
<td>13 (103)</td>
</tr>
<tr>
<td>3.4</td>
<td>Type of screening centres to administer COVID-19 tests</td>
<td>Hospital and community (104).</td>
<td>Hospital and community (105).</td>
<td>Hospital and community (106).</td>
</tr>
<tr>
<td>3.5</td>
<td>Description of screening and testing measures</td>
<td>Detector program includes a house-to-house search for possible cases and contacts (104).</td>
<td>Drive through testing facilities; expanded testing centres to alleviate pressure on hospitals and clinics (105).</td>
<td>Local test kit production (107); obligatory testing if admitted to health care facility (77); testing offered at home; random testing in areas with outbreaks.</td>
</tr>
</tbody>
</table>
3.2 Trace

Argentina has a similar contact tracing policy and strategy to South Korea and Uruguay. Moreover, as is the case in South Korea, Argentina requires mandatory quarantine of cases.

Table 6. Contact tracing policies

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Argentina</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.6</td>
<td>Contact tracing policy</td>
<td>All cases without exception (98).</td>
<td>All cases without exception (98).</td>
<td>All cases without exception (108).</td>
</tr>
<tr>
<td>3.7</td>
<td>Contact tracing strategy</td>
<td>Case identification and isolation and contact tracing plus monitoring and quarantine (109).</td>
<td>Case identification, contact tracing, and mandatory quarantine for identified confirmed and suspected cases (110).</td>
<td>Case identification and self-directed isolation plus contact tracing (108).</td>
</tr>
<tr>
<td>3.8</td>
<td>Other policies or mechanisms</td>
<td>Detector program includes a house-to-house search for possible cases and contacts (104).</td>
<td>Opened 600 screening centres (111); Epidemic Intelligence Surveillance officers permitted to draw on data sources including facility visits, credit card transaction logs, cellular GPS data, and CCTV; patient trajectories were made public (105,110).</td>
<td>App to alert individuals when they were in close proximity to a person with COVID-19 (112); telehealth and a centralized database for epidemiological reporting (77); synchronized case management and follow-up (113).</td>
</tr>
</tbody>
</table>

3.3 Treat

Argentina has seen a 62.3% decrease in outpatient visits between January and April 2020 for those under Programa SUMAR which represents 35% of the country population. Argentina had more intensive care unit (ICU) beds pre-COVID compared to South Korea and a comparable number to Uruguay. Like Uruguay, Argentina has increased the number of available beds and ventilators and has a similar ICU occupancy rate. These beds have been made available through conversion of public facilities, the establishment of new hospitals, and the manufacturing and distribution of ventilators.

Table 7. Health system capacity and adaptations

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Argentina</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.9</td>
<td>Daily outpatient visits: Jan 2020 to April 2020</td>
<td>01/20: 1,127,517 04/20: 424,896 (62.3% decrease) (28)</td>
<td>Undetermined</td>
<td>Undetermined</td>
</tr>
<tr>
<td>3.10</td>
<td>Existing (pre-COVID) ICU capacity</td>
<td>18.8 per 100,000 population (114)</td>
<td>10.6 per 100,000 population (115)</td>
<td>19.9 per 100,000 population (116)</td>
</tr>
<tr>
<td>3.11</td>
<td>ICU capacity August 2020</td>
<td>26.2 per 100,000 population (114)</td>
<td>Undetermined</td>
<td>23 per 100,000 population (103)</td>
</tr>
<tr>
<td>3.12</td>
<td>ICU occupation rate August 2020</td>
<td>51% (117)</td>
<td>Undetermined</td>
<td>52.4% (103)</td>
</tr>
</tbody>
</table>
Table 3.13

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Argentina</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Existing (pre-COVID) ventilator capacity</td>
<td>13.9 per 100,000 population (118)</td>
<td>19.11 per 100,000 population (119)</td>
<td>18.8 per 100,000 population (103)</td>
</tr>
<tr>
<td>14</td>
<td>Ventilator capacity August 2020</td>
<td>18.5 per 100,000 population (118)</td>
<td>Undetermined</td>
<td>Undetermined</td>
</tr>
<tr>
<td>15</td>
<td>COVID-19 ICU &amp; ventilator adaptations</td>
<td>Building new hospitals for COVID 19 patients (120); dedicated step-down facilities for recovering patients to relieve pressure on hospitals (121); distribution of respirators from central government to provincial government (122); domestic production of respirators (123).</td>
<td>Using portable negative pressure devices, the government was able to rapidly expand the supply of temporary airborne infection isolation rooms. In Daegu, officials created about 400 additional negative pressure beds during the crisis (110).</td>
<td>In March the government expanded the number of beds in ICU and increased the amount of specialized equipment and respirators in healthcare facilities nationally (124,125).</td>
</tr>
</tbody>
</table>

To increase the health workforce, Argentina (like Uruguay) has allowed medical students to support the COVID-19 response. In addition, Argentina has called for volunteer health workers to reinforce existing teams. Argentina has experienced PPE shortages and has attempted to secure supply through additional domestic production and foreign donations. Similar to Uruguay, Argentina has also produced guidance on reusing PPE.

**Table 8. Health care workforce, adaptations and supplies**

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Argentina</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.16</td>
<td>Existing (pre-COVID) doctors</td>
<td>9.4 per 1,000 population (126)</td>
<td>2.4 per 1,000 population (127)</td>
<td>5.1 per 1,000 population (116)</td>
</tr>
<tr>
<td>3.17</td>
<td>Existing (pre-COVID) nurses</td>
<td>9.0 per 1,000 population (126)</td>
<td>7.2 per 1,000 population (128)</td>
<td>1.9 per 1,000 population (116)</td>
</tr>
<tr>
<td>3.18</td>
<td>COVID-19 health workforce adaptations</td>
<td>Health workers from a range of professions summoned as volunteers to reinforce teams (129); advanced medical students supported triage activities at hospitals (130).</td>
<td>Additional workers trained in contact tracing. Additional healthcare workers hired or volunteered to aid in the crisis in some cities (110).</td>
<td>Re-training of staff to provide ICU care; expedition of registration of healthcare workers with the Ministry of Health; expedition of registration for medical trainees; program to allow public officials to perform as volunteers in different actions coordinated by the Ministry of Public Health (48,77).</td>
</tr>
<tr>
<td>3.19</td>
<td>PPE for healthcare workers</td>
<td><strong>PPE Availability:</strong> Shortage of masks for frontline workers (131,132).</td>
<td><strong>PPE Availability:</strong> Early shortages limited by penalizing export and hoarding of PPE. <strong>Adaptations:</strong> None</td>
<td><strong>PPE Availability:</strong> Initial shortage of medical supplies (Feb 2020) (136). <strong>Adaptations:</strong> Guidance on extended use and</td>
</tr>
<tr>
<td>Adaptations: Guidelines include information on re-use (133).</td>
<td>Domestic Production: Doubled domestic production of PPE goods.</td>
<td>Reprocessing of N95 respirators by healthcare staff (137).</td>
<td></td>
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<tr>
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<td>----------------------------------------------------------</td>
<td>----------------------------------------------------------</td>
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<td></td>
</tr>
<tr>
<td>Domestic production: Universities, factories, and others producing PPE (134); donation of mask-making machine from China (135).</td>
<td>Purchasing/Procurement: Government purchased 80% of the mask supply from Korean manufacturers early in the pandemic to secure mask supply (110).</td>
<td>Domestic production: Coordinated manufacturing of masks by the Ministry of Defence (138).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchasing/Procurement: Donation of masks and medical equipment from private suppliers, international organizations, and other countries.</td>
<td>Purchasing/Procurement: Central government coordinated purchasing of PPE and medical supplies (139).</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
References (Argentina)


96. Validation with partner in South Korea. 2020.


125. Presidencia de la República. Hospital de Salto se posiciona como centro regional de atención COVID-19 y suma 24 nuevas camas [Internet]. Presidencia de la República Oriental del Uruguay. [cited 2020


CHILE

Country Background

On February 8, 2020, Chile decreed a health alert that allowed the allocation of resources to the Ministry of Health for the preparedness of the country to the COVID-19 epidemic (1). Chile registered its first confirmed case of COVID-19 on March 3, 2020 – a citizen who had recently traveled to Southern Asia (2). As the number of new cases increased to 238, the President of Chile declared a national state of emergency (Estado de Excepción Constitucional de Catástrofe) on March 18, 2020 allowing the central government to introduce several procurement and containment measures (3).

On July 25, 2020, the government introduced the 5-step (Paso a Paso) plan to gradually reopen the activities in the country (4). This plan includes specific restrictions and measures in five different stages from quarantine to advance opening (5). Moving along the five steps depends on epidemiological indicators, healthcare capacity and traceability (5). Table 1 shows the total number of confirmed cases and deaths per 100,000 inhabitants in Chile compared to Uruguay and South Korea, as of November 1, 2020. Figure 1 shows the average of daily new cases and deaths in Chile by epidemiological week, as of November 1, 2020.

Table 1. Total number of confirmed cases and deaths per 100,000 inhabitants in Chile compared to Uruguay and South Korea, as of November 1, 2020

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Chile</th>
<th>Uruguay</th>
<th>South Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of confirmed cases</td>
<td>2669</td>
<td>90</td>
<td>52</td>
</tr>
<tr>
<td>per 100,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total number of confirmed deaths</td>
<td>74.3</td>
<td>1.7</td>
<td>0.9</td>
</tr>
<tr>
<td>per 100,000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Our World in Data (6).

Figure 1. Average of daily new cases and deaths in Chile by epidemiological week, as of November 1, 2020

Source: Data from Our World in Data, Coronavirus Pandemic (COVID-19) (6). Note: We considered December 29, 2019, to January 4, 2020, as the first epidemiological week and we only considered confirmed deaths due to COVID-19 (7).
1. Emergency Preparedness and Response Governance

1.1 Emergency Preparedness

Chile has comparable emergency preparedness to both Uruguay and South Korea, particularly in regard to existing legislation for pandemic response, severe acute respiratory infection (SARI)/influenza pandemic preparedness plans and surveillance systems to monitor both human and animal health. However, unlike these comparator countries, Chile did not have a stockpile of personal protective equipment (PPE).

Table 2. Emergency preparedness indicators

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Chile</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Existing legislation</td>
<td>The <em>Sanitary Code: Communicable Diseases of Mandatory Declaration</em> (8).</td>
<td>The <em>Infectious Disease Control and Prevention Act</em> and the <em>Quarantine Act</em> establishes mandatory disease notification and quarantine measures (9), as well as the <em>Fundamental Act on National Crisis Management</em>, which includes the Disaster Management Standards Manual, the Crisis Response Manual, and the Situation Action Manual (10).</td>
<td>Law No. 9,202 establishes the measures necessary to maintain collective health (11,12) and Decree No. 41/012 establishes mandatory disease notification including outbreak events.</td>
</tr>
<tr>
<td>1.3</td>
<td>Existing One Health or zoonotic coordination</td>
<td>Public health institute has worked with a “One Health” perspective for human and animal health (17); Ministry of Health Office of Zoonosis and Vector Control (18).</td>
<td>Korea Disease Control and Prevention Agency (KDCA): Division of Zoonotic and Vector Borne Disease Control (19).</td>
<td>National integrated preparedness plan for an influenza pandemic describes intersectoral integration between the Ministries of Public Health and Livestock at the central and departmental level (20).</td>
</tr>
<tr>
<td>1.4</td>
<td>Pandemic surveillance</td>
<td>Public health surveillance system for diseases with epidemic potential</td>
<td>Korea Influenza and Respiratory Virus Surveillance System (KINRESS); clinical Health Surveillance Department (DEVISA); National Emergency System</td>
<td></td>
</tr>
<tr>
<td>systems (human health)</td>
<td>(21); sentinel surveillance of SARIs at 6 hospitals across the country, surveillance of influenza-like-illness at 43 centres across the country linked with laboratories (22).</td>
<td>sentinel surveillance in 200 outpatient clinics; 52 laboratory sentinel surveillance sites; 207 hospitals conduct influenza hospitalization and mortality surveillance (23).</td>
<td>(SINAE); National Integrated Health System (SNIS) (24); SARI surveillance at 6 sentinel centres; IT system for hospital infection surveillance and influenza-like-illness reporting (ETI program) (25); respiratory samples are analyzed by the Department of Public Health Laboratory.</td>
<td></td>
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<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>1.5 Pandemic surveillance systems (animal health)</td>
<td>Component of the Agriculture and Livestock Service includes both active and passive surveillance of animal diseases (26).</td>
<td>National Institute of Health – Centre for Infectious Disease Research (Division of Bacterial Disease Research, or Division of Emerging Infectious Disease and Vector Research) and emergency coordination for zoonotic disease in coordination with the Ministry of Agriculture, Food, and Rural Affairs (27).</td>
<td>National Animal Health Emergency System (SINEASA) (28).</td>
<td></td>
</tr>
<tr>
<td>1.6 Teams of experts in SARI/influenza or emerging infectious diseases</td>
<td>Yes.</td>
<td>Yes – For emerging infectious diseases and for public health emergency preparedness response through the KDCA (19).</td>
<td>Emergency Operational Committee convened a commission of national technical experts for pandemic influenzas including clinicians, academics, virologists, and epidemiologists (20).</td>
<td></td>
</tr>
<tr>
<td>1.7 National PPE stockpile</td>
<td>No.</td>
<td>Yes – Following the 2015 MERS outbreak, changes were introduced to adopt a more dynamic stockpiling approach with a system for real time stockpiling management currently under implementation as well as a 5-year National Strategic Stockpile.</td>
<td>Yes – The Administration of the State Health Services (ASSE) and Ministry of Public Health purchased PPE, centralized stock, and ensured distribution to both the public and private sector (20).</td>
<td></td>
</tr>
</tbody>
</table>
1.2 COVID-19 Response Governance

The COVID-19 response in Chile, like South Korea and Uruguay, has featured leadership from the highest levels of government. Early in the pandemic, the Chilean government declared a state of emergency (Estado de Excepción Constitucional de Catástrofe) as a result of COVID-19, which gave the central government powers to suspend certain civil rights including freedom of movement and assembly (29). The central government has implemented most of the policies and measures related to the pandemic.

Table 3. COVID-19 response governance indicators

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Chile</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.8</td>
<td>President/Prime Minister leadership</td>
<td>Yes – An executive order has been implemented as a result of the state of emergency (29,30).</td>
<td>Yes – The president and prime Minister have both played central roles.</td>
<td>Yes – The president has been a central figure in the response and has held regular press conferences to communicate the government’s approach (“Prevent, react, control”) (31–34).</td>
</tr>
<tr>
<td>1.9</td>
<td>Establishment of taskforce or government-wide committee</td>
<td>Yes – Inter-ministerial coordination committee including the Ministries of Education, Transportation, and Health (35).</td>
<td>Yes – Using existing public health emergency response structures which activated high-level national response protocols to ensure a cross-society and pan-governmental approach including the prime minister, the Ministry of the Interior and Safety, Ministry of Health and Welfare, Government Office for Policy, and the National Security Council (27).</td>
<td>Yes – Departmental Coordination Centers of Emergencies (Cecoed) that form part of the Departmental Emergency Committee (CDE) (34) ; comprised of representatives of the Departmental Administration, the Ministry of Social Development, the Ministry of National Defense, the National Fire Department, the National Police, and the Ministry of Public Health (36).</td>
</tr>
<tr>
<td>1.10</td>
<td>Leadership from Chief Medical Officer of Health or another top scientific official</td>
<td>Yes – The minister of health was appointed as inter-ministerial coordinator of the Coronavirus Plan (35).</td>
<td>Yes (37)</td>
<td>Yes – Director General of Health advises the Minister of Public Health and the council of ministers on COVID-19 matters (38,39).</td>
</tr>
<tr>
<td>1.11</td>
<td>Pandemic funding</td>
<td>Yes – 12 Billion (USD) package for economic stimulus, approximately 36 million USD for supply of protective medical equipment for hospitals and primary care clinics (40,41).</td>
<td>Yes – 4 stages of fiscal measures beginning with immediate support for preventive and medical services, small merchants and small-to-medium enterprises, and financial support for</td>
<td>Yes – COVID solidarity fund (44).</td>
</tr>
<tr>
<td>1.12</td>
<td>Level of Government that decides policy</td>
<td>Central – Central government control stemming from declaration of national state of emergency (30,45).</td>
<td>Mixed – Horizontal coordination at the strategic level facilitated through the Central Safety Management Committee chaired by the prime minister; Ministry of Interior and Safety Public Health Disaster Response Division coordinated closely with Ministry of Health and Welfare (27).</td>
<td>Central – The president of the republic is advised by an Honorary Scientific Advisory Group (GACH) (46); It is the responsibility of the Ministry of Public Health (MSP) (38,47) to lead the national response, carry out risk assessments, and define the need to convene other organizations for the multisectoral response.</td>
</tr>
<tr>
<td>1.13</td>
<td>Level of Government that implements policy</td>
<td>Central government, through Health Ministry, decides when to implement the measures (48).</td>
<td>Mixed – Central government along with provincial and local governments implement the infectious disease prevention and control policy, together with a network of 256 Public Health Centers and medical institutions (27,49).</td>
<td>Central (38,50).</td>
</tr>
</tbody>
</table>
2. Timely Implementation of Effective Interventions to Prevent the Spread of COVID-19

The comparative exercise revealed several strengths in the Chilean response to COVID-19: for most of the indicators assessed, the level of stringency was higher in Chile than in both Uruguay and South Korea. However, as depicted in the Figures 2A and 2B, the timeliness of implementation lagged in Chile in 12 out of 16 interventions compared to Uruguay, and in nine compared to South Korea.

- Chile introduced its strictest stay at home measures almost three months after the country reached 0.1 cases per one million population (total quarantine in most affected provinces and neighbouring communes, plus a national curfew from 22:00 to 05:00) (51). This was nearly two months later than Uruguay and about one month later than South Korea (stay at home recommended only in South Korea).
- Chile introduced some of its income relief measures (income and housing expenses support) between three and four months after the country reached 0.1 deaths per one million population, including the Emergency Family Income for low-wage workers (52) and the rent subsidy for households whose income was reduced by 30% due to the pandemic (53).
- Chile introduced its strictest restrictions for gatherings about two months after the country reached 0.1 cases per one million population. This was almost one month later than South Korea.
- Chile introduced programs to support access to PPE in the general population over one month after the country reached 0.1 cases per one million population and approximately two months after South Korea introduced similar measures. These measures included the government allowing access to online price quotations of products such as ethanol, hand sanitizer, gloves, face masks, soap, thermometers, and wet towels (54), and distributing baskets with sanitary products in some areas (55).
- Chile introduced strict containment measures (school and workplace closing, cancellation of public events, and wearing face masks) earlier than South Korea but later than Uruguay.

There is an additional gap that suggests possible areas for strengthening the COVID-19 response in Chile.

- South Korea canceled or postponed all types of gatherings nationwide (56), while Chile placed these restrictions on only the most affected provinces (provinces in quarantine). In the rest of the provinces, meetings were allowed with a maximum of 50 people (57).
Table 4. Stringency levels in the strictest interventions in Chile compared to Uruguay and South Korea

<table>
<thead>
<tr>
<th>Indicator code</th>
<th>Indicator</th>
<th>LAC country</th>
<th>Comparators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Chile</td>
<td>Uruguay</td>
</tr>
<tr>
<td>M1</td>
<td>School closing</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M2</td>
<td>Workplace closing</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>M3</td>
<td>Cancellation of public events</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M4</td>
<td>Recommendations on gatherings</td>
<td>Moderate</td>
<td>No measures</td>
</tr>
<tr>
<td>M5</td>
<td>Close public transport</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>M6</td>
<td>Stay at home</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>M7</td>
<td>Restrictions on internal movement</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M8</td>
<td>International travel restrictions</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M9</td>
<td>Public info campaigns</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M10</td>
<td>Income support</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>M11</td>
<td>Debt/contract relief for households</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M12</td>
<td>Use of masks or face coverings</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M13</td>
<td>Programs to support food security</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M14</td>
<td>Programs to support housing expenses</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M15</td>
<td>Programs to support self-isolation</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M16</td>
<td>Programs to support access to PPE in the general population</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>

**Abbreviations:** PPE = personal protective equipment

**Sources:** Chile: M1 (58,59), M2 (60–62), M3 (63), M4 (57,64), M5 (64,65), M6 (51,64), M7 (66), M8 (67,68), M9 (69), M10 (52,70,71), M11 (72,73), M12 (74), M13 (54,55), M14 (53,75), M15 (76,77), M16 (54,78). Uruguay: M1 (79), M2 (80), M3 (80), M5 (81), M6 (80), M7 (80), M8 (80,82,83), M9 (69), M10 (80), M11 (80), M12 (84), M13 (80), M14 (85,86), M15 (80), M16 (80). South Korea: M1 (87,88), M2 (89), M3 (90), M4 (56), M6 (91), M7 (91), M8 (92), M9 (69), M10 (93), M11 (94), M12 (95), M13 (96), M14 (43,97), M15 (98,99), M16 (100)
Figure 2A. Timeline of the introduction of measures in Chile compared to Uruguay

Sources: Chile: M1 (58,59), M2 (60–62), M3 (63), M4 (57,64), M5 (64,65), M6 (51,64), M7 (66), M8 (67,68), M9 (69), M10 (52,70,71), M11 (72,73), M12 (74), M13 (54,55), M14 (53,75), M15 (76,77), M16 (54,78). Uruguay: M1 (79), M2 (80), M3 (80), M5 (81), M6 (80), M7 (80), M8 (80,82,83), M9 (69), M10 (80), M11 (80), M12 (84), M13 (80), M14 (85,86), M15 (80), M16 (80).
Figure 2B. Timeline of the introduction of measures in Chile compared to South Korea

Indicators code: M1= School closing; M2= Workplace closing; M3= Cancellation of public events; M4= Recommendations on gatherings; M5= Close public transport; M6= Stay at home; M7= Restrictions on internal movement; M8= International travel restrictions; M9= Public info campaigns; M10= Income support; M11= Debt/contract relief for households; M12= Use of masks or face coverings; M13= Programs to support food security; M14= Programs to support housing expenses; M15= Programs to support self-isolation for people in need of; M16= Programs to support access to personal protection equipment in the general population.

Abbreviations: FC= First confirmed case of COVID-19; FD= First confirmed death of COVID-19

Stringency: High Moderate Low

Benchmark Dates: \( \text{Date case benchmark reached (0.1 cases per 1 million inhabitants)} \) \( \text{Date death benchmark reached (0.1 deaths per 1 million inhabitants)} \)

Sources: Chile: M1 (58,59), M2 (60–62), M3 (57,74–76)(63), M4 (57,64), M5 (64,65), M6 (51,64), M7 (66), M8 (67,68), M9 (69), M10 (52,70,71), M11 (72,73), M12 (74), M13 (54,55), M14 (53,75), M15 (76,77), M16 (54,78). South Korea: M1 (87,88), M2 (89), M3 (90), M4 (56), M6 (91), M7 (91), M8 (92), M9 (69), M10 (93), M11 (94), M12 (95), M13 (96), M14 (43,97), M15 (98,99), M16 (100)
3. Healthcare Sector Responses

3.1 Test

Whereas the comparator countries’ national policies are for open public testing, including for asymptomatic individuals, Chile offers testing only for those with COVID-19 symptoms. However, in August the government began an “Active Search for Cases” initiative that tests asymptomatic individuals in some areas (101). Chile reports 12.7 tests per confirmed case, representing a larger burden of COVID-19 in the community compared to South Korea and Uruguay. Compared to the comparator countries, Chile has more institutions with lab capacity to process COVID-19 tests. Similar to Uruguay, Chile offers at-home testing.

Table 5. Screening and testing measures

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Chile</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>National Testing Policy</td>
<td>Testing anyone with symptoms (102) and some testing of asymptomatic individuals under the national “Active Search for Cases” (BAC) initiative (101).</td>
<td>Open public testing (incl. asymptomatic) (102).</td>
<td>Open public testing (incl. asymptomatic) (102).</td>
</tr>
<tr>
<td>3.2</td>
<td>Tests per confirmed case</td>
<td>12.7 (102)</td>
<td>209.1 (102)</td>
<td>136.9 (103)</td>
</tr>
<tr>
<td>3.3</td>
<td>Institutions with lab capacity to process COVID-19 tests</td>
<td>130 (48)</td>
<td>96 (104)</td>
<td>13 (105)</td>
</tr>
<tr>
<td>3.4</td>
<td>Type of screening centres to administer COVID-19 tests</td>
<td>Hospital and community (106).</td>
<td>Hospital and community (107).</td>
<td>Hospital and community (108).</td>
</tr>
<tr>
<td>3.5</td>
<td>Description of screening and testing measures</td>
<td>Dedicated private and public laboratories, testing in hospital and primary care clinics, as well as at-home testing in some regions and cities (106).</td>
<td>Drive through testing facilities; expanded testing centres to alleviate pressure on hospitals and clinics (107).</td>
<td>Local test kit production (109); obligatory testing if admitted to health care facility (80); testing offered at home; random testing in areas with outbreaks.</td>
</tr>
</tbody>
</table>
3.2 Trace

Chile has a similar contact tracing policy and strategy to South Korea and Uruguay. Like South Korea, Chile uses digital technologies to assist in contact tracing.

Table 6. Contact tracing policies

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Chile</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.6</td>
<td>Contact tracing policy</td>
<td>All cases without exception (102).</td>
<td>All cases without exception (102).</td>
<td>All cases without exception (110).</td>
</tr>
<tr>
<td>3.7</td>
<td>Contact tracing strategy</td>
<td>Case identification, contact tracing, self-monitoring, and quarantine (111).</td>
<td>Case identification, contact tracing, and mandatory quarantine for identified confirmed and suspected cases (112).</td>
<td>Case identification and self-directed isolation plus contact tracing (110).</td>
</tr>
<tr>
<td>3.8</td>
<td>Other policies or mechanisms</td>
<td>Using digital technologies such as the ICOVID platform and Epidemiologic Reports (113); increasing public health workforce to conduct contact tracing (114).</td>
<td>Opened 600 screening centres (115); Epidemic Intelligence Surveillance officers permitted to draw on data sources including facility visits, credit card transaction logs, cellular GPS data, and CCTV; patient trajectories were made public (107,112).</td>
<td>App to alert individuals when they were in close proximity to a person with COVID-19 (116); telehealth and a centralized database for epidemiological reporting (80); synchronized case management and follow-up (117).</td>
</tr>
</tbody>
</table>

3.3 Treat

Between January 2020 and July 2020 in Chile there has been a decrease in daily outpatient visits. Compared to comparator countries, Chile had fewer ICU beds before COVID, but similar to Uruguay, has increased the number of available beds. Chile also had fewer ventilators before COVID than comparator countries but has made more available through adaptations such as “splitters” which allow two patients to be connected to one ventilator.

Table 7. Health system capacity and adaptations

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Chile</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.9</td>
<td>Daily outpatient visits: Jan 2020 to July 2020</td>
<td>01/20: 4,444,577 visits; 07/20: 450,796 visits. (68.7% decrease)</td>
<td>Undetermined</td>
<td>Undetermined</td>
</tr>
<tr>
<td>3.10</td>
<td>Existing (pre-COVID) ICU capacity</td>
<td>7.3 ICU beds per 100,000 population (118)</td>
<td>10.6 per 100,000 population (119)</td>
<td>19.9 per 100,000 population (118)</td>
</tr>
<tr>
<td>3.11</td>
<td>ICU capacity August 2020</td>
<td>12 ICU beds per 100,000 population (120)</td>
<td>Undetermined</td>
<td>23 per 100,000 population (105)</td>
</tr>
<tr>
<td>Section</td>
<td>Description</td>
<td>August 2020</td>
<td>Undetermined</td>
<td>August 2020</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
<td>-------------</td>
<td>--------------</td>
<td>-------------</td>
</tr>
<tr>
<td>3.12</td>
<td>ICU occupation rate</td>
<td>~75% (121)</td>
<td>Undetermined</td>
<td>52.4% (105)</td>
</tr>
<tr>
<td>3.13</td>
<td>Existing (pre-COVID) ventilator capacity</td>
<td>6.5 per 100,000 population (122)</td>
<td>19.11 per 100,000 population (123)</td>
<td>18.8 per 100,000 population (105)</td>
</tr>
<tr>
<td>3.14</td>
<td>Ventilator capacity</td>
<td>26.6 per 100,000 population (124,125)</td>
<td>Undetermined</td>
<td>Undetermined</td>
</tr>
<tr>
<td>3.15</td>
<td>COVID-19 ICU &amp; ventilator adaptations</td>
<td>More ventilators made available for use by COVID-19 patients (126); the Ministry of Health authorized the use of &quot;splitters&quot; to connect two patients to the same ventilator (127); creation of modular hospitals with additional beds to treat COVID-19 patients (128).</td>
<td>Using portable negative pressure devices, the government was able to rapidly expand the supply of temporary airborne infection isolation rooms. In Daegu, officials created about 400 additional negative pressure beds during the crisis (112).</td>
<td>In March the government expanded the number of beds in ICU and increased the amount of specialized equipment and respirators in healthcare facilities nationally (129,130).</td>
</tr>
</tbody>
</table>

To increase the health workforce, Chile, much like Uruguay, has allowed medical students to support the COVID-19 response. However, Chile has gone further by allowing upper year nursing, obstetrics and childcare, medical technology, kinesiology and psychology students to be a part of the response. In addition, Chile allowed retired and foreign medical professionals to support the response effort.

Similar to comparators Chile has experienced PPE shortages, and like Uruguay guidance was provided on the extended use and reprocessing of PPE by healthcare staff. To ensure the PPE supply the Chilean government invited suppliers to centralize reporting of their stocks using the ChileCompra Agency online portal (131).
### Table 8. Health care workforce, adaptations and supplies

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Chile</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.16</td>
<td>Existing (pre-COVID) doctors</td>
<td>2.5 per 1,000 population (118)</td>
<td>2.4 per 1,000 population (132)</td>
<td>5.1 per 1,000 population (118)</td>
</tr>
<tr>
<td>3.17</td>
<td>Existing (pre-COVID) nurses</td>
<td>2.7 per 1,000 population (118)</td>
<td>7.2 per 1,000 population (133)</td>
<td>1.9 per 1,000 population (118)</td>
</tr>
<tr>
<td>3.18</td>
<td>COVID-19 health workforce adaptations</td>
<td>Flexibility in requirements to hire doctors and medical professionals without certification including retired health professionals, foreign medical doctors, current upper medical, nursing, obstetrics and childcare, medical technology, kinesiology, and psychology students (134,135).</td>
<td>Additional workers trained in contact tracing. Additional healthcare workers hired or volunteered to aid in the crisis in some cities (112).</td>
<td>Re-training of staff to provide ICU care; expedition of registration of healthcare workers with the Ministry of Health; expedition of registration for medical trainees; program to allow public officials to perform as volunteers in different actions coordinated by the Ministry of Public Health (47,80).</td>
</tr>
</tbody>
</table>
References (Chile)


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ECUADOR

Country Background

Ecuador registered its first confirmed case of COVID-19 on February 29, 2020 – a citizen who had recently traveled to Spain (1). As the number of new cases increased to 17, the minister of health declared a state of emergency in the national health system on March 11 (2), and on March 13, the government activated the National Emergency Operations Committee (Comité de Operaciones de Emergencias Nacional or COE) to coordinate the response to COVID-19 (2). With the second death, the president of Ecuador declared a state of exception (lockdown) on March 16 to reduce community transmission of the virus (3). To reactivate the economy, the government announced (April 26) a gradual reopening of economic activities starting on May 4 through a traffic light system (4,5) in which provinces were categorized in colors (red, orange, and green) according to the number of confirmed cases and response capacity (6).

Table 1 shows the total number of confirmed cases and deaths per 100,000 inhabitants in Ecuador compared to Uruguay and South Korea, as of November 1, 2020. Figure 1 shows the average of daily new cases and deaths in Ecuador by epidemiological week, as of November 1, 2020.

**Table 1.** Total number of confirmed cases and deaths per 100,000 inhabitants in Ecuador compared to Uruguay and South Korea, as of November 1, 2020

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Ecuador</th>
<th>Uruguay</th>
<th>South Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of confirmed cases per 100,000</td>
<td>953</td>
<td>90</td>
<td>52</td>
</tr>
<tr>
<td>Total number of confirmed deaths per 100,000</td>
<td>71.8</td>
<td>1.7</td>
<td>0.91</td>
</tr>
</tbody>
</table>

*Source: Our World in Data (7)*

**Figure 1.** Average of daily new cases and deaths in Ecuador by epidemiological week, as of November 1, 2020

*Source: Data from Our World in Data, Coronavirus Pandemic (COVID-19) (7). Note: We considered December 29, 2019, to January 4, 2020, as the first epidemiological week and we only considered confirmed deaths due to COVID-19 (8).
1. Emergency Preparedness and Response Governance

1.1 Emergency Preparedness

Emergency preparedness in Ecuador is comparable to both Uruguay and South Korea, particularly in regard to existing legislation for pandemic response, severe acute respiratory infection (SARI)/influenza pandemic preparedness plans, and surveillance systems to monitor both human and animal health.

Table 2. Emergency preparedness indicators

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Ecuador</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Existing legislation</td>
<td>Ecuador, Constitution of the Republic, Title II, Chapter II – Rights of Good Living – on communicable diseases outlines legal responsibilities regarding communicable diseases and the right to health (9).</td>
<td>The Infectious Disease Control and Prevention Act and the Quarantine Act establishes mandatory disease notification and quarantine measures (10), as well as the Fundamental Act on National Crisis Management, which includes the Disaster Management Standards Manual, the Crisis Response Manual, and the Situation Action Manual (11).</td>
<td>Law No. 9,202 establishes the measures necessary to maintain collective health (12,13) and Decree No.41/012 establishes mandatory disease notification including outbreak events.</td>
</tr>
<tr>
<td>1.3</td>
<td>Existing One Health or zoonotic coordination</td>
<td>Monitoring body for avian influenza comprised of representatives of the Ecuadorian Animal Health Service (MAG-SESA) of the Ministry of Agriculture, Ministry of Environment, and Ministry of Health (14).</td>
<td>Korea Disease Control and Prevention Agency (KDCA): Division of Zoonotic and Vector Borne Disease Control (17).</td>
<td>National integrated preparedness plan for an influenza pandemic describes intersectoral integration between the Ministries of Public Health and Livestock at the central and departmental level (18).</td>
</tr>
<tr>
<td>1.4</td>
<td>Pandemic surveillance systems (human health)</td>
<td>Sentinel surveillance and Integrated Epidemiological Surveillance System (SIVE) alert system convened by the National Directorate of Surveillance Epidemiological (DNVE) for coordinating monitoring and reporting on SARI.</td>
<td>Korea Influenza and Respiratory Virus Surveillance System (KINRESS); Clinical sentinel surveillance in 200 outpatient clinics; 52 laboratory sentinel surveillance sites; 207 hospitals conduct influenza surveillance</td>
<td>Health Surveillance Department (DEVISA); National Emergency System (SINAE); National Integrated Health System (SNIS) (21); SARI surveillance at 6 sentinel centres; IT system for hospital infection surveillance and influenza-like-illness</td>
</tr>
<tr>
<td>1.5</td>
<td>Pandemic surveillance systems (animal health)</td>
<td>Both active and passive reporting for animal health is conducted through the Phyto and Zoosanitary Regulation and Control Agency (23).</td>
<td>National Institute of Health – Centre for Infectious Disease Research (Division of Bacterial Disease Research, or Division of Emerging Infectious Disease and Vector Research) and emergency coordination for zoonotic disease in coordination with the Ministry of Agriculture, Food, and Rural Affairs (24).</td>
<td>National Animal Health Emergency System (SINEASA) (25).</td>
</tr>
<tr>
<td>1.6</td>
<td>Teams of experts in SARI/influenza or emerging infectious diseases</td>
<td>Influenza technical group of the Ministry of Public Health (14).</td>
<td>Yes – For emerging infectious diseases and for public health emergency preparedness response through the KDCA (17).</td>
<td>Emergency Operational Committee convened a commission of national technical experts for pandemic influenzas including clinicians, academics, virologists, and epidemiologists (18).</td>
</tr>
<tr>
<td>1.7</td>
<td>National PPE stockpile</td>
<td>No.</td>
<td>Yes – Following the 2015 MERS outbreak, changes were introduced to adopt a more dynamic stockpiling approach, with a system for real time stockpiling management currently under implementation as well as a 5-year National Strategic Stockpile.</td>
<td>Yes – The Administration of the State Health Services (ASSE) and Ministry of Public Health purchased PPE, centralized stock, and ensured distribution to both the public and private sectors (18).</td>
</tr>
</tbody>
</table>
1.2 COVID-19 Response Governance

The COVID-19 response in Ecuador, like South Korea and Uruguay, has featured leadership from the highest levels of government. President Lenín Moreno has assumed a direct role in the COVID-19 response, particularly in announcing government policies and measures to the public, and Vice-President Otto Sonnenholzner led the state response (26) before resigning on July 7, 2020. Similar to South Korea and Uruguay, Ecuador established a government-wide committee (COE) to coordinate the national COVID-19 response. Unlike Uruguay, the role of a top scientific official in Ecuador is unclear. Similar to Uruguay, Ecuador has centralized COVID-19 policymaking. However, implementation is mixed between the central and regional governments (like South Korea).

Table 3. COVID-19 response governance indicators

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Ecuador</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.8</td>
<td>President/Prime Minister leadership</td>
<td>Yes – the president has been a central figure in the response and has held press conferences to provide information on the COVID-19 situation and the response (27).</td>
<td>Yes – the president and prime minister have both played central roles.</td>
<td>Yes – the president has been a central figure in the response and has held regular press conferences to communicate the government's approach (&quot;Prevent, react, control&quot;) (28–31).</td>
</tr>
<tr>
<td>1.9</td>
<td>Establishment of taskforce or government-wide committee</td>
<td>Yes – Existing coordinating body National Emergency Operations Committee (COE) (32) directed by the president and includes the vice president of the republic and representatives from the Ministries of Health, Government, Defense, Education, Economic and Social Inclusion, Labour and Telecommunications, as well as the General Secretariat of Risks, Communication Secretariat, National Police and basic services (water, electricity, garbage, and communications) (32); also the Interdisciplinary Team for Containment Epidemiology EICE made up of multiple ministries and institutions (33).</td>
<td>Yes – using existing public health emergency response structures which activated high-level national response protocols to ensure a cross-society and pan-governmental approach including the prime minister, the Ministry of the Interior and Safety, Ministry of Health and Welfare, Government Office for Policy, and the National Security Council (24).</td>
<td>Yes – Departmental Coordination Centers of Emergencies (Cecoed) that form part of the Departmental Emergency Committee (CDE) (31); comprised of representatives of the Departmental Administration, the Ministry of Social Development, the Ministry of National Defense, the National Fire Department, the National Police, and the Ministry of Public Health (34).</td>
</tr>
<tr>
<td>Section</td>
<td>Question</td>
<td>Answer</td>
<td>Additional Information</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>----------</td>
<td>--------</td>
<td>------------------------</td>
<td></td>
</tr>
<tr>
<td>1.10</td>
<td>Leadership from Chief Medical Officer of Health or another top scientific official</td>
<td>Unconfirmed.</td>
<td>Yes (35). Yes – Director General of Health advises the Minister of Public Health and the council of ministers of COVID-19 matters (36,37).</td>
<td></td>
</tr>
<tr>
<td>1.11</td>
<td>Pandemic funding</td>
<td>Yes – Resources for pandemic preparedness are guaranteed (38).</td>
<td>Yes – 4 stages of fiscal measures beginning with immediate support for preventive and medical services, small merchants and small-to-medium enterprises, and financial support for individuals quarantined/self-quarantined (39,40). Yes – COVID solidarity fund (41).</td>
<td></td>
</tr>
<tr>
<td>1.12</td>
<td>Level of Government that decides policy</td>
<td>Central –Primarily the Ministry of Health, Ministry of Finance, and the Social Security Institute (42).</td>
<td>Mixed – horizontal coordination at the strategic level facilitated through the Central Safety Management Committee chaired by the prime minister; Ministry of Interior and Safety Public Health Disaster Response Division coordinate closely with Ministry of Health and Welfare (24). Central – The president of the republic is advised by an Honorary Scientific Advisory Group (GACH) (43); It is the responsibility of the Ministry of Public Health (36,44) to lead the national response, carry out risk assessments, and define the need to convene other organizations for the multisectoral response.</td>
<td></td>
</tr>
<tr>
<td>1.13</td>
<td>Level of Government that implements policy</td>
<td>Mixed – Both central and regional (45,46).</td>
<td>Mixed – Central government along with provincial and local governments implement the infectious disease prevention and control policy, together with a network of 256 Public Health Centers and medical institutions (24,47). Central (36,48).</td>
<td></td>
</tr>
</tbody>
</table>
2. Timely Implementation of Effective Interventions to Prevent the Spread of COVID-19

The comparative exercise revealed several strengths in the Ecuadorian response to COVID-19: for most of the indicators assessed, the level of stringency was as high in Ecuador as in both Uruguay and South Korea. However, as depicted in figures 2A and 2B, the timeliness of implementation lagged in Ecuador in 11 out of 16 interventions compared to Uruguay, and four compared to South Korea.

- Ecuador introduced programs to support self-isolation (isolation centres, mainly hotels, for repatriates and vulnerable individuals without shelter) about two months after the country reached 0.1 cases per one million population, and nearly two months after similar measures were introduced in Uruguay and South Korea (49).
- Ecuador introduced the strictest restrictions in gatherings about five months after the country reached 0.1 cases per one million population, almost three months later than South Korea.
- Ecuador introduced strict closure measures (workplace closing, stay at home, restrictions on internal movement, and cancelation of public events) earlier than South Korea including the enforcement of stay-at-home measures.
- Ecuador introduced strict measures on face mask coverings earlier than South Korea. However, wearing face masks in South Korea is highly accepted by the public and it was not enforced in all the public spaces during the early stages of the epidemic (50).
- Ecuador introduced income relief measures (income, debt relief, and programs to support food security and housing expenses) earlier than South Korea, but later than Uruguay. These measures included cash transfers (Bono de Protección Familiar) to low-income families (51,52), extended payment deferrals for income tax declaration and social security contributions (53), delivery of food baskets (54,55), and moratoriums for payments of mortgages and rent (56,57).

Based on the experiences of South Korea and Uruguay, there are some actions that could strengthen the COVID-19 response in Ecuador.

- South Korea canceled gatherings nationwide (58) while Ecuador placed these restrictions on only the most affected provinces (59).
- South Korea and Uruguay introduced programs to support the use of personal protection equipment (PPE) in the general population. To maintain supply prices, Uruguay publishes a weekly list of the minimum, maximum, and average prices of basic hygiene products, monitors the stock of hygiene supplies, and has agreements with merchants, producers, and intermediaries to maintain supplies prices (60). South Korea implemented measures to stabilize the supply of face mask and sanitizers, including penalties for excessive prices (61) and a system that allowed residents to acquire a maximum of two masks per person per week on designated days (62).
### Table 4. Stringency levels in the strictest interventions in Ecuador compared to Uruguay and South Korea

<table>
<thead>
<tr>
<th>Indicator code</th>
<th>Indicator</th>
<th>LAC country</th>
<th>Comparators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Ecuador</td>
<td>Uruguay</td>
</tr>
<tr>
<td>M1</td>
<td>School closing</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M2</td>
<td>Workplace closing</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>M3</td>
<td>Cancellation of public events</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M4</td>
<td>Recommendations on gatherings</td>
<td>Moderate</td>
<td>No measures</td>
</tr>
<tr>
<td>M5</td>
<td>Close public transport</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>M6</td>
<td>Stay at home</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>M7</td>
<td>Restrictions on internal movement</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M8</td>
<td>International travel restrictions</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M9</td>
<td>Public info campaigns</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M10</td>
<td>Income support</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>M11</td>
<td>Debt/contract relief for households</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>M12</td>
<td>Use of masks or face coverings</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M13</td>
<td>Programs to support food security</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M14</td>
<td>Programs to support housing expenses</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M15</td>
<td>Programs to support self-isolation</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M16</td>
<td>Programs to support access to PPE in the general population</td>
<td>No measures</td>
<td>High</td>
</tr>
</tbody>
</table>

**Abbreviations**: PPE = personal protective equipment  
**Sources**: Ecuador: M1 (63), M2 (64), M3 (65), M4 (59), M5 (66), M6 (3,63), M7 (63,66), M8 (63,67), M9 (68), M10 (51,52), M11 (53), M12 (69), M13 (54,55), M14 (56,57), M15 (49). Uruguay: M1 (70), M2 (60), M3 (60), M5 (71), M6 (60), M7 (60), M8 (60,72,73), M9 (68), M10 (60), M11 (60), M12 (74), M13 (60), M14 (75,76), M15 (60), M16 (60). South Korea: M1 (77,78), M2 (79), M3 (80), M4 (81), M6 (82), M7 (82), M8 (83), M9 (68), M10 (84), M11 (85), M12 (86), M13 (87), M14 (40,88), M15 (89,90), M16 (61)
Figure 2A. Timeline of the introduction of measures in Ecuador compared to Uruguay

Sources: Ecuador: M1 (63), M2 (64), M3 (65), M4 (59), M5 (66), M6 (3,63), M7 (63,66), M8 (63,67), M9 (68), M10 (51,52), M11 (53), M12 (69), M13 (54,55), M14 (56,57), M15 (49). Uruguay: M1 (70), M2 (60), M3 (60), M5 (71), M6 (60), M7 (60), M8 (60,72,73), M9 (68), M10 (60), M11 (60), M12 (74), M13 (60), M14 (75,76), M15 (60), M16 (60).
Figure 2B. Timeline of the introduction of measures in Ecuador compared to South Korea

Indicators code: M1= School closing; M2= Workplace closing; M3= Cancellation of public events; M4= Recommendations on gatherings; M5= Close public transport; M6= Stay at home; M7= Restrictions on internal movement; M8= International travel restrictions; M9= Public info campaigns; M10= Income support; M11= Debt/contract relief for households; M12= Use of masks or face coverings; M13= Programs to support food security; M14= Programs to support housing expenses; M15= Programs to support self-isolation for people in need of; M16= Programs to support access to personal protection equipment in the general population.

Abbreviations: FC= First confirmed case of COVID-19; FD= First confirmed death of COVID-19

Stringency: High Moderate Low

Benchmark Dates: Date case benchmark reached (1 cases per 1 million inhabitants) Date death benchmark reached (1 deaths per 1 million inhabitants)

Sources: Ecuador: M1 (63), M2 (64), M3 (65), M4 (59), M5 (66), M6 (3,63), M7 (63,66), M8 (63,67), M9 (68), M10 (51,52), M11 (53), M12 (69), M13 (54,55), M14 (56,57), M15 (49). South Korea: M1 (77,78), M2 (79), M3 (80), M4 (81), M6 (82), M7 (82), M8 (83), M9 (68), M10 (84), M11 (85), M12 (86), M13 (87), M14 (40,88), M15 (89,90), M16 (61)
3. Healthcare Sector Responses

3.1 Test

Testing is open to the public including asymptomatic individuals, a policy that is comparable with South Korea and Uruguay. Ecuador reports 2.8 tests per confirmed case, representing a larger burden of COVID-19 in the community compared to South Korea and Uruguay. Testing is conducted in hospitals and community settings, with 21 labs equipped to process COVID-19 tests.

Table 5. Screening and testing measures

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Ecuador</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>National Testing Policy</td>
<td>Open public testing (incl. asymptomatic) (91).</td>
<td>Open public testing (incl. asymptomatic) (91).</td>
<td>Open public testing (incl. asymptomatic) (91).</td>
</tr>
<tr>
<td>3.2</td>
<td>Tests per confirmed case</td>
<td>2.8 (92)</td>
<td>209.1 (91)</td>
<td>136.9 (93)</td>
</tr>
<tr>
<td>3.3</td>
<td>Institutions with lab capacity to process COVID-19 tests</td>
<td>24 (94)</td>
<td>96 (95)</td>
<td>13 (96)</td>
</tr>
<tr>
<td>3.4</td>
<td>Type of screening centres to administer COVID-19 tests</td>
<td>Hospital and community (97).</td>
<td>Hospital and community (98).</td>
<td>Hospital and community (99).</td>
</tr>
<tr>
<td>3.5</td>
<td>Description of screening and testing measures</td>
<td>Call centre to triage persons with respiratory symptoms (100); testing algorithm to determine use of PCR or rapid test (101); community testing in high burden areas (97).</td>
<td>Drive through testing facilities; expanded testing centres to alleviate pressure on hospitals and clinics (98).</td>
<td>Local test kit production (102); obligatory testing if admitted to healthcare facility (60); testing offered at home; random testing in areas with outbreaks.</td>
</tr>
</tbody>
</table>

3.2 Trace

Compared to South Korea and Uruguay, Ecuador has a limited contact tracing policy such that not all confirmed or suspected cases undergo contact tracing. Moreover, contact tracing is limited to case identification and self-directed isolation at home for mild-to-moderate cases. In contrast, Uruguay conducts contact tracing of cases, and South Korea expands upon this by requiring mandatory enforced quarantine of such cases.
Table 6. Contact tracing policies

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Ecuador</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.6</td>
<td>Contact tracing policy</td>
<td>Limited tracing (91).</td>
<td>All cases without exception (91).</td>
<td>All cases without exception (103).</td>
</tr>
<tr>
<td>3.7</td>
<td>Contact tracing strategy</td>
<td>Case identification and</td>
<td>Case identification, contact</td>
<td>Case identification and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>self-directed isolation of</td>
<td>tracing, mandatory quarantine</td>
<td>self-directed isolation plus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the case if mild or admittance</td>
<td>for identified confirmed and</td>
<td>contact tracing (103).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>to hospital (97).</td>
<td>suspected cases (104).</td>
<td></td>
</tr>
<tr>
<td>3.8</td>
<td>Other policies or mechanisms</td>
<td>App to alert individuals</td>
<td>Opened 600 screening centres</td>
<td>App to alert individuals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>when they were in close</td>
<td>(106); Epidemic Intelligence</td>
<td>when they were in close</td>
</tr>
<tr>
<td></td>
<td></td>
<td>proximity to a person with</td>
<td>Surveillance officers permitted</td>
<td>proximity to a person with</td>
</tr>
<tr>
<td></td>
<td></td>
<td>COVID-19 (105); regional</td>
<td>to draw on data sources including</td>
<td>COVID-19 (107); telehealth</td>
</tr>
<tr>
<td></td>
<td></td>
<td>variations in approaches with</td>
<td>facility visits, credit card</td>
<td>and a centralized database</td>
</tr>
<tr>
<td></td>
<td></td>
<td>high-burden areas conducting</td>
<td>transaction logs, cellular GPS</td>
<td>for epidemiological reporting (60);</td>
</tr>
<tr>
<td></td>
<td></td>
<td>community screening and testing</td>
<td>data, and CCTV; patient</td>
<td>synchronized case</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(97).</td>
<td>trajectories were made public</td>
<td>management and follow-up (108).</td>
</tr>
</tbody>
</table>

3.3 Treat

Much like South Korea and Uruguay, Ecuador expanded the number of intensive care units (ICU) beds available and procured supplies, such as monitoring equipment to support ongoing care of hospitalized patients with COVID-19.

Table 7. Health system capacity and adaptations

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Ecuador</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.9</td>
<td>Daily outpatient visits: Jan 2020 to July 202</td>
<td>01/20: 3,268,112 07/20: 829,555 (74.6% decrease) (109)</td>
<td>Undetermined</td>
<td>Undetermined</td>
</tr>
<tr>
<td>3.10</td>
<td>Existing (pre-COVID) ICU capacity</td>
<td>5.9 per 100,000 population* (110,111)</td>
<td>10.6 per 100,000 population (112)</td>
<td>19.9 per 100,000 population (113)</td>
</tr>
<tr>
<td>3.11</td>
<td>ICU capacity August 2020</td>
<td>Undetermined**</td>
<td>Undetermined</td>
<td>23 per 100,000 population (96)</td>
</tr>
<tr>
<td>3.12</td>
<td>ICU occupation rate August 2020</td>
<td>Undetermined</td>
<td>Undetermined</td>
<td>52.4% (96)</td>
</tr>
<tr>
<td>3.13</td>
<td>Existing (pre-COVID) ventilator capacity</td>
<td>Undetermined</td>
<td>19.11 per 100,000 population (114)</td>
<td>18.8 per 100,000 population (96)</td>
</tr>
<tr>
<td>3.14</td>
<td>Ventilator capacity August 2020</td>
<td>Undetermined</td>
<td>Undetermined</td>
<td>Undetermined</td>
</tr>
</tbody>
</table>
In June the government expanded the number of ICU beds and hospitals purchased more monitoring equipment (115,116); regionalized response – creation of medical care stations in neighbourhoods with high numbers of cases to reduce pressure on hospitals and ICU facilities (46); 26 hospitals (public and private) offer care for COVID-19 patients (33,117).

Using portable negative pressure devices, the government was able to rapidly expand the supply of temporary airborne infection isolation rooms. In Daegu, officials created about 400 additional negative pressure beds during the crisis (104).

In March the government expanded the number of beds in intensive care units and increased the amount of specialized equipment and respirators in healthcare facilities nationally (118,119).

* Both public and private
** Due to differences between data sources, the value for this measure is uncertain and is not included

To increase the health workforce, Ecuador (like Uruguay) has allowed medical students to support the COVID-19 response. Final-year medical students as well as retired doctors are allowed to provide telemedicine triage for people with respiratory symptoms.

Ecuador has reported regional shortages of PPE. These shortages are addressed through domestic production and government procurement from foreign suppliers. To meet the demands for PPE, the Ministry of Public Health in Ecuador, much like Uruguay, has established guidance on extended use, reprocessing for reuse, and use of expired PPE. However, unlike the comparator countries, Ecuador has not introduced policies to control and ensure PPE supplies for the general population.

Table 8. Healthcare workforce, adaptations, and supplies

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Ecuador</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.16</td>
<td>Existing (pre-COVID) doctors</td>
<td>1.09 per 1,000 population*</td>
<td>2.4 per 1,000 population</td>
<td>5.1 per 1,000 population</td>
</tr>
<tr>
<td></td>
<td>(120)</td>
<td>(121)</td>
<td>(113)</td>
<td></td>
</tr>
<tr>
<td>3.17</td>
<td>Existing (pre-COVID) nurses</td>
<td>1.11 per 1,000 population*</td>
<td>7.2 per 1,000 population</td>
<td>1.9 per 1,000 population</td>
</tr>
<tr>
<td></td>
<td>(120)</td>
<td>(122)</td>
<td>(113)</td>
<td></td>
</tr>
<tr>
<td>3.18</td>
<td>COVID-19 health workforce adaptations</td>
<td>Retired doctors and students in their last years of medical education are providing telemedicine triage for people with respiratory symptoms (100,123).</td>
<td>Additional workers trained in contact tracing. Additional healthcare workers hired or volunteered to aid in the crisis in some cities (104).</td>
<td>Re-training of staff to provide ICU care; expedition of registration of healthcare workers with the Ministry of Health; expedition of registration for medical trainees; program to allow public officials to perform as volunteers in different actions coordinated by the Ministry of Public Health (44,60).</td>
</tr>
</tbody>
</table>
3.19 Personal protective equipment for healthcare workers

<table>
<thead>
<tr>
<th>Country</th>
<th>PPE Availability</th>
<th>Adaptations</th>
<th>Domestic Production</th>
<th>Purchasing/Procurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>E.U.</td>
<td>Regional shortages of medical supplies (45).</td>
<td>Guidance on extended use and reprocessing for reuse of PPE including N95 respirators and the use of expired N95 respirators by healthcare staff (124).</td>
<td>Local companies manufacturing medical supplies including masks, gowns, sanitizer gel, and disinfectants (125).</td>
<td>Central government coordinated purchasing of PPE and medical supplies (126).</td>
</tr>
<tr>
<td>E.U.</td>
<td>Early shortages limited by penalizing export and hoarding of PPE.</td>
<td>None</td>
<td>Doubled domestic production of PPE goods.</td>
<td>Government purchased 80% of the mask supply from Korean manufacturers early in the pandemic to secure mask supply (104).</td>
</tr>
</tbody>
</table>

* Does not include doctors and nurses working in social security establishments or in the private sector


67. La Ministra de Gobierno, el Ministro de Relaciones Exteriores y Movilidad Humana, y el Ministro de Transportes y Obras Públicas. Acuerdo Interministerial No. 0000003 [Internet]. 2020. Available from:


Validation with partner in South Korea. 2020.


111. Direct information to Ecuador World Bank partner.


EL SALVADOR

Country Background

To delay the entry and dispersion of COVID-19, El Salvador introduced containment measures on March 11, 2020 (1) and then declared a national state of emergency (Estado de Emergencia Nacional, Estado de Calamidad Pública y Desastre Natural) on March 14 (2). On March 18, 2020, El Salvador registered the first confirmed case of COVID-19 (3). On June 9, the government announced a five-phase plan for the gradual reopening of the economy (4,5). Each phase specifies the types and capacity of the activities permitted, with progression between phases depending on epidemiological indicators (6–8).

Table 1 shows the total number of confirmed cases and deaths per 100,000 inhabitants in El Salvador compared to Uruguay and South Korea, as of November 1, 2020. Figure 1 shows the average number of daily new cases and deaths in El Salvador by epidemiological week, as of November 1, 2020.

Table 1. Total number of confirmed cases and deaths per 100,000 inhabitants in El Salvador compared to Uruguay and South Korea, as of November 1, 2020 (9)

<table>
<thead>
<tr>
<th>Indicator</th>
<th>El Salvador</th>
<th>Uruguay</th>
<th>South Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of confirmed cases</td>
<td>516</td>
<td>90</td>
<td>52</td>
</tr>
<tr>
<td>per 100,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total number of confirmed deaths</td>
<td>15.1</td>
<td>1.7</td>
<td>0.91</td>
</tr>
<tr>
<td>per 100,000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 1. Average of daily new cases and deaths in El Salvador by epidemiological week, as of November 1, 2020

Source: Data from Our World in Data, Coronavirus Pandemic (COVID-19) (9). Note: We considered December 29, 2019, to January 4, 2020, as the first epidemiological week and we only considered confirmed deaths due to COVID-19 (10).
1. Emergency Preparedness and Response Governance

1.1 Emergency Preparedness

El Salvador has comparable emergency preparedness to both Uruguay and South Korea, particularly regarding existing legislation for pandemic response, severe acute respiratory infection (SARI)/influenza pandemic preparedness plans and surveillance systems to monitor both human and animal health. However, unlike these comparator countries, El Salvador did not have a stockpile of personal protective equipment (PPE).

Table 2. Emergency preparedness indicators

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>El Salvador</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Existing legislation</td>
<td>Health Code establishes mandatory disease notification and quarantine measures (11); Civil Protection, Prevention and Disaster Mitigation Law establishes emergency governmental powers (12).</td>
<td>The Infectious Disease Control and Prevention Act and the Quarantine Act establishes mandatory disease notification and quarantine measures (13), as well as the Fundamental Act on National Crisis Management, which includes the Disaster Management Standards Manual, the Crisis Response Manual, and the Situation Action Manual (14).</td>
<td>Law No. 9,202 establishes the measures necessary to maintain collective health (15,16) and Decree No.41/012 establishes mandatory disease notification including outbreak events.</td>
</tr>
<tr>
<td>1.3</td>
<td>Existing One Health or zoonotic</td>
<td>National Commission for Influenza pandemic (CONAPREVIAR) (20).</td>
<td>Korea Disease Control and Prevention Agency (KDCA): Division of Zoonotic and Vector Borne Disease Control (21)</td>
<td>National integrated preparedness plan for an influenza pandemic describes intersectoral integration between the Ministries of Public Health and Livestock at the central and departmental level (22).</td>
</tr>
<tr>
<td></td>
<td>coordination</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.4</td>
<td>Pandemic surveillance systems (human health)</td>
<td>National Commission for Influenza pandemic; Sentinel surveillance at 5 hospitals and 8 centres for influenza-like illness across the country, connected to a</td>
<td>Korea Influenza and Respiratory Virus Surveillance System (KINRESS); Clinical sentinel surveillance in 200 outpatient clinics; 52 laboratory sentinel surveillance</td>
<td>Health Surveillance Department (DEVISA); National Emergency System (SINAE); National Integrated Health System (SNIS) (25); SARI surveillance at 6 sentinel</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>Pandemic surveillance systems (animal health)</td>
<td>Through CONAPREVIAR, surveillance of backyard and wild birds, and at distribution centers (20).</td>
<td>National Institute of Health - Centre for Infectious Disease Research (Division of Bacterial Disease Research, or Division of Emerging Infectious Disease and Vector Research) and emergency coordination for zoonotic disease in coordination with the Ministry of Agriculture, Food, and Rural Affairs (27).</td>
<td>National Animal Health Emergency System (SINEASA) (28).</td>
</tr>
<tr>
<td>1.6</td>
<td>Teams of experts in SARI/influenza or emerging infectious diseases</td>
<td>Yes – The National Commission for Influenza pandemic (CONAPREVIAR) (20).</td>
<td>Yes – For emerging infectious diseases and for public health emergency preparedness response through the KDCA (21).</td>
<td>Emergency Operational Committee convened a commission of national technical experts for pandemic influenzas including clinicians, academics, virologists, and epidemiologists (22).</td>
</tr>
<tr>
<td>1.7</td>
<td>National PPE stockpile</td>
<td>No.</td>
<td>Yes – Following the 2015 MERS outbreak, changes were introduced to adopt a more dynamic stockpiling approach with a system for real time stockpiling management currently under implementation as well as a 5-year National Strategic Stockpile.</td>
<td>Yes – The Administration of the State Health Services (ASSE) and Ministry of Public Health purchased PPE, centralized stock, and ensured distribution to both the public and private sector (22).</td>
</tr>
</tbody>
</table>
1.2 COVID-19 Response Governance

The COVID-19 response in El Salvador, like South Korea and Uruguay, has featured leadership from the highest levels of government including a government-wide committee. Like Uruguay, the central government makes all major policy decisions related to the COVID-19 response. However, these policies are implemented through a mix of central government and local governments, as in South Korea.

Table 3. COVID-19 response governance indicators

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>El Salvador</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.8</td>
<td>President/Prime Minister leadership</td>
<td>Yes – The president has been a central figure in the response (29).</td>
<td>Yes – The president and prime minister have both played central roles.</td>
<td>Yes – The president has been a central figure in the response and has held regular press conferences to communicate the government’s approach (“Prevent, react, control”) (30–33).</td>
</tr>
<tr>
<td>1.9</td>
<td>Establishment of taskforce or government-wide committee</td>
<td>Yes – Expanded Health Cabinet (Gabinete de Salud Ampliado) (34) including representation from multiple ministries (35).</td>
<td>Yes – Using existing public health emergency response structures which activated high-level national response protocols to ensure a cross-society and pan-governmental approach including the prime minister, the Ministry of the Interior and Safety, Ministry of Health and Welfare, Government Office for Policy, and the National Security Council (27).</td>
<td>Yes – Departmental Coordination Centers of Emergencies (Cecoed) that form part of the Departmental Emergency Committee (CDE) (33); comprised of representatives of the Departmental Administration, the Ministry of Social Development, the Ministry of National Defense, the National Fire Department, the National Police, and the Ministry of Public Health (36).</td>
</tr>
<tr>
<td>1.10</td>
<td>Leadership from Chief Medical Officer of Health or another top scientific official</td>
<td>Yes (37).</td>
<td>Yes (38).</td>
<td>Yes – Director General of Health advises the Minister of Public Health and the council of ministers on COVID-19 matters (39,40).</td>
</tr>
<tr>
<td>1.11</td>
<td>Pandemic funding</td>
<td>Yes – To support municipalities with the operation of activities related to public education, health, and environmental sanitation services (41).</td>
<td>Yes – 4 stages of fiscal measures beginning with immediate support for preventive and medical services, small merchants and small-to-medium enterprises, and financial support for individuals quarantined/self-quarantined (42,43).</td>
<td>Yes – COVID solidarity fund (44).</td>
</tr>
<tr>
<td>1.12 Level of Government that decides policy</td>
<td>Central – The central government decides policies and provides funding towards the COVID-19 response (45).</td>
<td>Mixed – Horizontal coordination at the strategic level facilitated through the Central Safety Management Committee chaired by the prime minister; Ministry of Interior and Safety Public Health Disaster Response Division coordinated closely with Ministry of Health and Welfare (27).</td>
<td>Central – The president of the republic is advised by an Honorary Scientific Advisory Group (GACH); (46); It is the responsibility of the Ministry of Public Health (39,47) to lead the national response, carry out risk assessments, and define the need to convene other organizations for the multisectoral response.</td>
<td></td>
</tr>
<tr>
<td>1.13 Level of Government that implements policy</td>
<td>Mixed – Central government along with regional and municipal governments implement COVID-19 policies (45).</td>
<td>Mixed – Central government along with provincial and local governments implement the infectious disease prevention and control policy, together with a network of 256 Public Health Centers and medical institutions (27,48).</td>
<td>Central (39,49).</td>
<td></td>
</tr>
</tbody>
</table>
2. Timely Implementation of Effective Interventions to Prevent the Spread of COVID-19

In most of the indicators assessed, the level of stringency was higher in El Salvador than in both Uruguay and South Korea. However, as depicted in figures 2A and 2B, the timeliness of implementation lagged in El Salvador in six out of 16 interventions compared to Uruguay, and two compared to South Korea.

- El Salvador introduced its strictest measures in closing public transport more than one month after the country reached 0.1 deaths per one million population, roughly one month later than Uruguay. However, these measures were stricter than in Uruguay and South Korea. All public transport in El Salvador, including taxi and uber services, were suspended for 15 days (50,51). In contrast, South Korea did not implement any measures in public transport and Uruguay decreased by 50% the amount of public transport circulating on weekends (52).

- El Salvador introduced its strictest debt relief measures about one month after the country reached 0.1 deaths per one million population, including moratoriums for the payment of utilities, banning the cancellation of water service due to lack of payment, and relaxing the requirement to pay debts and loans (53). This was approximately one month later than Uruguay and one week later than South Korea.

- El Salvador introduced programs to support access to PPE in the general population almost two weeks before the country reached 0.1 deaths per one million population, including the delivery of kits with face masks, hand sanitizer, latex gloves, and rubber boots to seniors in retirement homes and residences (54). This was two months later than South Korea.

- However, El Salvador introduced its strictest measures to wear face masks nearly one month after the country reached 0.1 cases per million people, some six months earlier than South Korea.

There were no policy gaps in terms of the stringency of measures introduced by El Salvador relative to Uruguay or South Korea.
**Table 4. Stringency levels in the strictest interventions in El Salvador compared to Uruguay and South Korea**

<table>
<thead>
<tr>
<th>Indicator code</th>
<th>Indicator</th>
<th>LAC country</th>
<th>Comparators</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1</td>
<td>School closing</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M2</td>
<td>Workplace closing</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>M3</td>
<td>Cancellation of public events</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M4</td>
<td>Recommendations on gatherings</td>
<td>High</td>
<td>No measures</td>
</tr>
<tr>
<td>M5</td>
<td>Close public transport</td>
<td>High</td>
<td>No measures</td>
</tr>
<tr>
<td>M6</td>
<td>Stay at home</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>M7</td>
<td>Restrictions on internal movement</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M8</td>
<td>International travel restrictions</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>M9</td>
<td>Public info campaigns</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M10</td>
<td>Income support</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>M11</td>
<td>Debt/contract relief for households</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>M12</td>
<td>Use of masks or face coverings</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>M13</td>
<td>Programs to support food security</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M14</td>
<td>Programs to support housing expenses</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M15</td>
<td>Programs to support self-isolation</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M16</td>
<td>Programs to support access to PPE in the general population</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>

Abbreviations: PPE = personal protective equipment

Sources: El Salvador: M1 (34), M2 (34,55), M3 (34,55), M4 (55,56), M5 (50,51,57), M6 (55), M7 (57), M8 (1,58), M9 (59), M10 (60), M11 (53,61), M12 (62), M13 (53,63), M14 (53,55), M15 (64), M16 (54,65,66). Uruguay: M1 (67), M2 (68), M3 (52), M6 (68), M7 (68), M8 (68–70), M9 (59), M10 (68), M11 (68), M12 (71), M13 (68), M14 (72,73), M15 (68), M16 (68). South Korea: M1 (74,75), M2 (76), M3 (77), M4 (78), M6 (79), M7 (79), M8 (80), M9 (59), M10 (81), M11 (82), M12 (83), M13 (84), M14 (43,85), M15 (86,87), M16 (88)
Figure 2A. Timeline of the introduction of measures in El Salvador compared to Uruguay

**Indicators code:** M1 = School closing; M2 = Workplace closing; M3 = Cancellation of public events; M4 = Recommendations on gatherings; M5 = Close public transport; M6 = Stay home; M7 = Restrictions on internal movement; M8 = International travel restrictions; M9 = Public info campaigns; M10 = Income support; M11 = Debt/contract relief for households; M12 = Use of masks or face coverings; M13 = Programs to support food security; M14 = Programs to support housing expenses; M15 = Programs to support self-isolation; M16 = Programs to support access to personal protection equipment in the general population;

**Abbreviations:** FC = First confirmed case of COVID-19; FD = First confirmed death of COVID-19

**Stringency:** high, moderate, low

**Benchmark Dates:** Date case benchmark reached (0.1 cases per 1 million inhabitants); Date death benchmark reached (0.1 deaths per 1 million inhabitants)

**Sources:** El Salvador: M1 (34), M2 (34,55), M3 (34,55), M4 (55,56), M5 (50,51,57), M6 (55), M7 (57), M8 (1,58), M9 (59), M10 (60), M11 (53,61), M12 (62), M13 (53,63), M14 (53,55), M15 (64), M16 (54,65,66). Uruguay: M1 (67), M2 (68), M3 (68), M5 (52), M6 (68), M7 (68), M8 (68–70), M9 (59), M10 (68), M11 (68), M12 (71), M13 (68), M14 (72,73), M15 (68), M16 (68).
Figure 2B. Timeline of the introduction of measures in El Salvador compared to South Korea

Sources: El Salvador: M1 (34), M2 (34,55), M3 (34,55), M4 (55,56), M5 (50,51,57), M6 (55), M7 (57), M8 (1,58), M9 (59), M10 (60), M11 (53,61), M12 (62), M13 (53,63), M14 (53,55), M15 (64), M16 (54,65,66). South Korea: M1 (74,75), M2 (76), M3 (77), M4 (78), M6 (79), M7 (79), M8 (80), M9 (59), M10 (81), M11 (82), M12 (83), M13 (84), M14 (43,85), M15 (86,87), M16 (88)
3. Healthcare Sector Responses

3.1 Test

Comparable to South Korea and Uruguay, the national testing policy is open to the public including asymptomatic individuals. El Salvador reports 14.3 tests per confirmed case, representing a larger burden of COVID-19 in the community compared to South Korea and Uruguay. Testing is conducted in hospitals and in community settings. Compared to the comparator countries, El Salvador has fewer laboratories able to process COVID-19 tests but has quarantine enforcement centres for testing and holding those who break quarantine.

Table 5. Screening and testing measures

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>El Salvador</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>National Testing Policy</td>
<td>Open public testing (incl. asymptomatic) (89).</td>
<td>Open public testing (incl. asymptomatic) (89).</td>
<td>Open public testing (incl. asymptomatic) (89).</td>
</tr>
<tr>
<td>3.2</td>
<td>Tests per confirmed case</td>
<td>14.3 (9)</td>
<td>209.1 (89)</td>
<td>136.9 (90)</td>
</tr>
<tr>
<td>3.3</td>
<td>Institutions with lab capacity to process COVID-19 tests</td>
<td>6 (91)</td>
<td>96 (92)</td>
<td>13 (93)</td>
</tr>
<tr>
<td>3.4</td>
<td>Type of screening centres to administer COVID-19 tests</td>
<td>Hospital and community (94).</td>
<td>Hospital and community (95).</td>
<td>Hospital and community (96).</td>
</tr>
<tr>
<td>3.5</td>
<td>Description of screening and testing measures</td>
<td>Quarantine enforcement centres (centros de contención) for testing and containing those who broke quarantine (97); mobile testing in municipal markets (94); both private and public sector hospitals treat COVID-19 (98).</td>
<td>Drive through testing facilities; expanded testing centres to alleviate pressure on hospitals and clinics (95).</td>
<td>Local test kit production (99); obligatory testing if admitted to health care facility (68); testing offered at home; random testing in areas with outbreaks.</td>
</tr>
</tbody>
</table>

3.2 Trace

Compared to South Korea and Uruguay, El Salvador has a limited contact tracing policy where not all confirmed or suspected cases undergo contact tracing. The contact tracing strategy in El Salvador is limited to case identification and self-directed isolation at home for mild to moderate cases. In contrast, Uruguay conducts contact tracing of cases which South Korea expands upon by requiring mandatory enforced quarantine. To control the outbreak, El Salvador created “epidemiological fences” which prevented movement in and out of areas with high numbers of confirmed cases.
Table 6. Contact tracing policies

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>El Salvador</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.6</td>
<td>Contact tracing policy</td>
<td>Limited tracing (Only in some cases) (89).</td>
<td>All cases without exception (89).</td>
<td>All cases without exception (100).</td>
</tr>
<tr>
<td>3.7</td>
<td>Contact tracing strategy</td>
<td>Case identification and isolation (101).</td>
<td>Case identification, contact tracing, and mandatory quarantine for identified confirmed and suspected cases (102).</td>
<td>Case identification and self-directed isolation plus contact tracing (100).</td>
</tr>
<tr>
<td>3.8</td>
<td>Other policies or mechanisms</td>
<td>‘Epidemiological Fences’ and mobile testing cabins deployed in areas with higher numbers of cases (103–105).</td>
<td>Opened 600 screening centres (106); Epidemic Intelligence Surveillance officers permitted to draw on data sources including facility visits, credit card transaction logs, cellular GPS data, and CCTV; patient trajectories were made public (95,102).</td>
<td>App to alert (104–106) individuals when they were in close proximity to a person with COVID-19 (107); telehealth and a centralized database for epidemiological reporting (68); synchronized case management and follow-up (108).</td>
</tr>
</tbody>
</table>

3.3 Treat

El Salvador had fewer intensive care unit (ICU) beds and ventilators than the comparator countries before COVID, but, similar to Uruguay, is increasing the number of available beds. Like comparator countries, beds have been made available through the construction of new hospitals and upgrading existing facilities. El Salvador also received a large foreign donation of ventilators to increase capacity.

Table 7. Health system capacity and adaptations

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>El Salvador</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.9</td>
<td>Daily outpatient visits: Jan 2020 to July 2020</td>
<td>Undetermined</td>
<td>Undetermined</td>
<td>Undetermined</td>
</tr>
<tr>
<td>3.10</td>
<td>Existing (pre-COVID) ICU capacity</td>
<td>1.1 per 100,000 population (109)</td>
<td>10.6 per 100,000 population (110)</td>
<td>19.9 per 100,000 population (109)</td>
</tr>
<tr>
<td>3.11</td>
<td>ICU capacity August 2020</td>
<td>Undetermined</td>
<td>Undetermined</td>
<td>23 per 100,000 (93)</td>
</tr>
<tr>
<td>3.12</td>
<td>ICU occupation rate August 2020</td>
<td>100%</td>
<td>Undetermined</td>
<td>52.4% (93)</td>
</tr>
<tr>
<td>3.13</td>
<td>Existing (pre-COVID) ventilator capacity</td>
<td>Undetermined</td>
<td>19.11 per 100,000 (111)</td>
<td>18.8 per 100,000 (93)</td>
</tr>
</tbody>
</table>
To increase the health workforce, El Salvador (like Uruguay) has recruited doctors from other countries and allowed medical students to support the COVID-19 response. El Salvador has experienced personal protective equipment (PPE) shortages: like Uruguay, the government provided guidance on the extended use and reprocessing of PPE by healthcare staff. To ensure PPE supply the government of relied on local production and secured donations from other countries.

Table 8. Health care workforce, adaptations and supplies

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>El Salvador</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.16</td>
<td>Existing (pre-COVID) doctors</td>
<td>1.6 per 1,000 population (118)</td>
<td>2.4 per 1,000 population (119)</td>
<td>5.1 per 1,000 population (109)</td>
</tr>
<tr>
<td>3.17</td>
<td>Existing (pre-COVID) nurses</td>
<td>1.8 per 1,000 population (118)</td>
<td>7.2 per 1,000 population (120)</td>
<td>1.9 per 1,000 population (109)</td>
</tr>
<tr>
<td>3.18</td>
<td>COVID-19 health workforce adaptations</td>
<td>Training and hiring of health workers (121); bringing in teams of doctors from other countries (122); graduating medical students recruited to assist with the COVID-19 response (123).</td>
<td>Additional workers trained in contact tracing. Additional healthcare workers hired or volunteered to aid in the crisis in some cities (102).</td>
<td>Re-training of staff to provide ICU care; expedition of registration of healthcare workers with the Ministry of Health; expedition of registration for medical trainees; program to allow public officials to perform as volunteers in different actions coordinated by the Ministry of Public Health (68,124).</td>
</tr>
</tbody>
</table>
| 3.19 | PPE for healthcare workers          | **PPE Availability:** Severe ongoing shortage of masks and equipment for frontline workers (125).  
**Adaptations:** Healthcare workers advised to reuse | **PPE Availability:** Early shortages limited by penalizing export and hoarding of PPE.  
**Adaptations:** None | **PPE Availability:** Initial shortage of medical supplies (Feb 2020) (129).  
**Adaptations:** Guidance on extended use and reprocessing of N95 |
<table>
<thead>
<tr>
<th>masks and equipment (126); guidance on reuse of PPE (127).</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Domestic production:</strong> Local businesses producing face shields (128).</td>
</tr>
<tr>
<td><strong>Purchasing/Procurement:</strong> Donation from other countries (128).</td>
</tr>
<tr>
<td><strong>Domestic Production:</strong> Doubled domestic production of PPE goods.</td>
</tr>
<tr>
<td><strong>Purchasing/Procurement:</strong> Government purchased 80% of the mask supply from Korean manufacturers early in the pandemic to secure mask supply (102).</td>
</tr>
<tr>
<td>respirators by healthcare staff (130).</td>
</tr>
<tr>
<td><strong>Domestic production:</strong> Coordinated manufacturing of masks by the Ministry of Defence (131).</td>
</tr>
<tr>
<td><strong>Purchasing/Procurement:</strong> Central government coordinated purchasing of PPE and medical supplies (132).</td>
</tr>
</tbody>
</table>
References (El Salvador)


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GUATEMALA

Country Background

After the World Health Organization’s announcement of the COVID-19 relevance as an international public health matter, Guatemala declared a national state of emergency (Estado de Calamidad Pública) on March 5 2020 (1). The same day, the government presented its plan for the prevention, containment, and response to cases of COVID-19 in the country (1). Guatemala registered its first confirmed case of COVID-19 on March 13 2020 (2) – a citizen who had recently traveled to Italy (3).

On July 27, the Ministry of Public Health and Social Assistance announced a health alert dashboard system for the gradual reopening of the economy (4). This system categorizes the municipalities by colors (green, yellow, orange and red) according to the number of infections registered; a color is also assigned to different economic sectors within municipalities to indicate the activities allowed to reopen, as well as their restrictions and recommendations (5). Table 1 shows the total number of confirmed cases and deaths per 100,000 inhabitants compared to Uruguay and South Korea, as of November 1, 2020. Figure 1 shows the average of daily new cases and deaths in Guatemala by epidemiological week, as of November 1, 2020.

Table 1. Total number of confirmed cases and deaths per 100,000 inhabitants in Guatemala compared to Uruguay and South Korea, as of November 1, 2020

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Guatemala</th>
<th>Uruguay</th>
<th>South Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of confirmed cases per 100,000</td>
<td>602</td>
<td>90</td>
<td>52</td>
</tr>
<tr>
<td>Total number of confirmed deaths per 100,000</td>
<td>20.1</td>
<td>1.7</td>
<td>0.91</td>
</tr>
</tbody>
</table>

Source: Our World in Data (6)

Figure 1. Average of daily new cases and deaths in Ecuador by epidemiological week, as of November 1, 2020

Source: Data from Our World in Data, Coronavirus Pandemic (COVID-19) (6). Note: We considered December 29, 2019, to January 4, 2020, as the first epidemiological week and we only considered confirmed deaths due to COVID-19 (7).
1. Emergency Preparedness and Response Governance

1.1 Emergency Preparedness

Guatemala has comparable emergency preparedness to both Uruguay and South Korea, including pandemic response legislation, severe acute respiratory infection (SARI)/influenza pandemic preparedness plans and surveillance systems to monitor both human and animal health. However, Guatemala did not have a stockpile of personal protective equipment (PPE).

Table 2. Emergency preparedness indicators

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Guatemala</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Existing legislation</td>
<td>Internal Organic Regulation of the Ministry of Public Health and Social Assistance (8) and Congress of the Republic of Guatemala Health Code (9) establishes surveillance and control of infectious diseases.</td>
<td>The Infectious Disease Control and Prevention Act and the Quarantine Act establishes mandatory disease notification and quarantine measures (10), as well as the Fundamental Act on National Crisis Management, which includes the Disaster Management Standards Manual, the Crisis Response Manual, and the Situation Action Manual (11).</td>
<td>Law No. 9,202 establishes the measures necessary to maintain collective health (12,13) and Decree No.41/012 establishes mandatory disease notification including outbreak events.</td>
</tr>
<tr>
<td>1.3</td>
<td>Existing One Health or zoonotic coordination</td>
<td>Decree in the health code for coordination between The Ministries of Health and Agriculture, Livestock and Food for a surveillance program (17).</td>
<td>Korea Disease Control and Prevention Agency (KDCA): Division of Zoonotic and Vector Borne Disease Control (18)</td>
<td>National integrated preparedness plan for an influenza pandemic describes intersectoral integration between the Ministries of Public Health and Livestock at the central and departmental level (19).</td>
</tr>
<tr>
<td>1.4</td>
<td>Pandemic surveillance systems (human health)</td>
<td>Acute Respiratory Infections and Foodborne and Waterborne Diseases Program (20); surveillance through the Integrated Health Care System (SIAS) (21).</td>
<td>Korea Influenza and Respiratory Virus Surveillance System (KINRESS); Clinical sentinel surveillance in 200 outpatient clinics; 52 laboratory sentinel surveillance sites; 207 hospitals</td>
<td>Health Surveillance Department (DEVISA); National Emergency System (SINADE); National Integrated Health System (SNIS) (23); SARI surveillance at 6 sentinel centres; IT system for hospital</td>
</tr>
<tr>
<td>Section</td>
<td>Description</td>
<td>Yes/No</td>
<td>Details</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
<td>--------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>Pandemic surveillance systems (animal health)</td>
<td>Yes, Ministry of Health Department of Epidemiology (e.g. surveillance for rabies, leptospirosis, brucellosis, etc.) (25).</td>
<td>National Institute of Health – Centre for Infectious Disease Research (Division of Bacterial Disease Research, or Division of Emerging Infectious Disease and Vector Research) and emergency coordination for zoonotic disease in coordination with the Ministry of Agriculture, Food, and Rural Affairs (26). National Animal Health Emergency System (SINEASA) (27).</td>
<td></td>
</tr>
<tr>
<td>1.6</td>
<td>Teams of experts in SARI/influenza or emerging infectious diseases</td>
<td>Acute Respiratory Infections and Foodborne and Waterborne Diseases Program (20).</td>
<td>Yes – For emerging infectious diseases and for public health emergency preparedness response through the KDCA (18). Emergency Operational Committee convened a commission of national technical experts for pandemic influenzas including clinicians, academics, virologists, and epidemiologists (19).</td>
<td></td>
</tr>
<tr>
<td>1.7</td>
<td>National PPE stockpile</td>
<td>No</td>
<td>Yes – Following the 2015 MERS outbreak, changes were introduced to adopt a more dynamic stockpiling approach with a system for real time stockpiling management currently under implementation as well as a 5-year National Strategic Stockpile. Yes – The Administration of the State Health Services (ASSE) and Ministry of Public Health purchased PPE, centralized stock, and ensured distribution to both the public and private sector (19).</td>
<td></td>
</tr>
</tbody>
</table>
### 1.2 COVID-19 Response Governance

The COVID-19 response in Guatemala has featured leadership from the highest levels of government and a multi-ministerial committee. However, unlike Uruguay, neither the Chief Medical Officer of Health nor any other top scientific official are involved in COVID-19 leadership. In Guatemala, COVID-19 response policies are decided by the central government and enacted by a mix of central and municipal governments.

**Table 3. COVID-19 response governance indicators**

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Guatemala</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.8</td>
<td>president/prime minister leadership</td>
<td>Yes – The president has played a central role (28).</td>
<td>Yes – The president and prime minister have both played central roles.</td>
<td>Yes – The president has been a central figure in the response and has held regular press conferences to communicate the government’s approach (“Prevent, react, control”) (29–32).</td>
</tr>
<tr>
<td>1.9</td>
<td>Establishment of taskforce or government-wide committee</td>
<td>Yes – Presidential Commission for Attention to the COVID-19 Emergency (COPRECOVID), created by Government Agreement 65-2020 includes representatives from the Ministries of Public Health and Social Assistance, Public Finance, Labor and Social Welfare, Social Development, Agriculture, Livestock and Food, and the Ministry of Planning (33–35).</td>
<td>Yes – Using existing public health emergency response structures which activated high-level national response protocols to ensure a cross-society and pan-governmental approach including the Prime Minister, the Ministry of the Interior and Safety, Ministry of Health and Welfare, Government Office for Policy, and the National Security Council (26).</td>
<td>Yes – Departmental Coordination Centers of Emergencies (Cecoed) that form part of the Departmental Emergency Committee (CDE) (32); comprised of representatives of the Departmental Administration, the Ministry of Social Development, the Ministry of National Defense, the National Fire Department, the National Police, and the Ministry of Public Health (36).</td>
</tr>
<tr>
<td>1.10</td>
<td>Leadership from Chief Medical Officer of Health or another top scientific official</td>
<td>No.</td>
<td>Yes (37).</td>
<td>Yes – Director General of Health advises the Minister of Public Health and the council of ministers on COVID-19 matters (38,39).</td>
</tr>
<tr>
<td>1.11</td>
<td>Pandemic funding</td>
<td>Yes.</td>
<td>Yes – 4 stages of fiscal measures beginning with immediate support for preventive and medical services, small merchants and small-to-medium enterprises, and financial support for individuals.</td>
<td>Yes – COVID solidarity fund (42).</td>
</tr>
</tbody>
</table>


| 1.12 | Level of Government that decides policy | Central — At the national level, there is a Presidential Commission which makes policy decisions on matters related to COVID-19, led by the Minister of Health (43). | Mixed — Horizontal coordination at the strategic level facilitated through the Central Safety Management Committee chaired by the prime minister; Ministry of Interior and Safety Public Health Disaster Response Division coordinated closely with Ministry of Health and Welfare (26). | Central — The president of the republic is advised by an Honorary Scientific Advisory Group (GACH) (44); It is the responsibility of the Ministry of Public Health (MSP) (38,45) to lead the national response, carry out risk assessments, and define the need to convene other organizations for the multisectoral response. |
| 1.13 | Level of Government that implements policy | Mixed — Policy is implemented mostly at the national level with limited implementation at the municipal level (43). | Mixed — Central government along with provincial and local governments implement the infectious disease prevention and control policy, together with a network of 256 Public Health Centers and medical institutions (26,46). | Central (38,47). |
2. Timely Implementation of Effective Interventions to Prevent the Spread of COVID-19

For most of the indicators assessed, the level of stringency was as high in Guatemala as it was in Uruguay and South Korea. However, as depicted in Figure 2A and 2B, the timeliness of implementation lagged in five out of 16 interventions compared to Uruguay, and two compared to South Korea.

- Guatemala introduced its strictest income relief measures (income support and debt relief) nearly one month after the country reached 0.1 cases per one million population, including a cash-transfer program (Bono Familia) to support housing expenses in low-income households (48), the prohibition of the interruption of utilities (water, electricity, telephone, and Internet) for lack or delay in payment, and an increase in the subsidy of electricity (49). This was done almost one month later than Uruguay.

- Guatemala introduced programs to support self-isolation nearly one month after the country reached 0.1 cases per one million people, including temporary quarantine centers to serve deported citizens (50). This was almost one month later than South Korea.

- Guatemala introduced programs to support access to PPE in the general population about one month after the country reached 0.1 cases per one million population, including the monitoring to avoid hoarding of cleaning products and the delivery of face masks nationwide (51). This was nearly two months later than South Korea.

- However, Guatemala introduced some of its strictest containment measures (school and workplace closing, cancellation of public events, stay at home, and restrictions on gatherings and internal movement) earlier than South Korea.

- In addition, Guatemala introduced its strictest measure for face masks nearly one month after the country reached 0.1 cases per million people - earlier than in South Korea and Uruguay.

Based on the experiences of South Korea and Uruguay, there are some actions that could strengthen the COVID-19 response in Guatemala.

- South Korea and Uruguay introduced programs to support housing expenses. South Korea shared 50% of the cost of rent with landlords and offered them consumption vouchers and tax exemptions if landlords voluntarily offer a rental discount to tenants (41,52). Uruguay subsidized up to 50% of the rent for individuals enrolled in unemployment insurance and started agreements to make mortgage payments more flexible (through discounts or payment deferrals) (53,54).
<table>
<thead>
<tr>
<th>Indicator code</th>
<th>Indicator</th>
<th>LAC country Guatemala</th>
<th>Comparators Uruguay</th>
<th>South Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1</td>
<td>School closing</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M2</td>
<td>Workplace closing</td>
<td>High</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>M3</td>
<td>Cancellation of public events</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M4</td>
<td>Recommendations on gatherings</td>
<td>High</td>
<td>No measures</td>
<td>High</td>
</tr>
<tr>
<td>M5</td>
<td>Close public transport</td>
<td>High</td>
<td>Moderate</td>
<td>No measures</td>
</tr>
<tr>
<td>M6</td>
<td>Stay at home</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Low</td>
</tr>
<tr>
<td>M7</td>
<td>Restrictions on internal movement</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M8</td>
<td>International travel restrictions</td>
<td>High</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>M9</td>
<td>Public info campaigns</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M10</td>
<td>Income support</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>M11</td>
<td>Debt/contract relief for households</td>
<td>High</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>M12</td>
<td>Use of masks or face coverings</td>
<td>High</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>M13</td>
<td>Programs to support food security</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M14</td>
<td>Programs to support housing expenses</td>
<td>No measures</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M15</td>
<td>Programs to support self-isolation</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M16</td>
<td>Programs to support access to PPE in the general population</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>

**Abbreviations:** PPE = personal protective equipment

**Sources:** Guatemala: M1 (55), M2 (56), M3 (56), M4 (1), M5 (56), M6 (57), M7 (58), M8 (58), M9 (59), M10 (60–62), M11 (49,63), M12 (64), M13 (65–67), M15 (50), M16 (51,65,68). Uruguay: M1 (69), M2 (70), M3 (70), M5 (71), M6 (70), M7 (70), M8 (70,72,73), M9 (59), M10 (70), M11 (70), M12 (74), M13 (70), M14 (53,54), M15 (70), M16 (70). South Korea: M1 (75,76), M2 (77), M3 (78), M4 (79), M6 (80), M7 (80), M8 (81), M9 (59), M10 (82), M11 (83), M12 (84), M13 (85), M14 (41,52), M15 (86,87), M16 (88)
**Figure 2A.** Timeline of the introduction of measures in Guatemala compared to Uruguay

**Indicators code:** M1= School closing; M2= Workplace closing; M3= Cancellation of public events; M4= Recommendations on gatherings; M5= Close public transport; M6= Stay at home; M7= Restrictions on internal movement; M8= International travel restrictions; M9= Public info campaigns; M10= Income support; M11= Deb/contract relief for households; M12= Use of masks or face coverings; M13= Programs to support food security; M14= Programs to support housing expenses; M15= Programs to support self-isolation for people in need of; M16= Programs to support access to personal protection equipment in the general population;

**Stringency:** High Moderate Low

**Benchmark Dates:** Date case benchmark reached (0.1 cases per 1 million inhabitants) Date death benchmark reached (0.1 deaths per 1 million inhabitants)

**Source:**
- **Guatemala:** M1 (55), M2 (56), M3 (56), M4 (1), M5 (56), M6 (57), M7 (58), M8 (58), M9 (59), M10 (60–62), M11 (49,63), M12 (64), M13 (65–67), M15 (50), M16 (51,65,67–69).
- **Uruguay:** M1 (69), M2 (70), M3 (70), M5 (71), M6 (70), M7 (70), M8 (70,72,73), M9 (59), M10 (70), M11 (70), M12 (74), M13 (70), M14 (53,54), M15 (70), M16 (70).
**Figure 2B.** Timeline of the introduction of measures in Guatemala compared to South Korea

**Indicators code:** M1= School closing; M2= Workplace closing; M3= Cancellation of public events; M4= Recommendations on gatherings; M5= Close public transport; M6= Stay at home; M7= Restrictions on internal movement; M8= International travel restrictions; M9= Public info campaigns; M10= Income support; M11= Debt/contract relief for households; M12= Use of masks or face coverings; M13= Programs to support food security; M14= Programs to support housing expenses; M15= Programs to support self-isolation for people in need of; M16= Programs to support access to personal protection equipment in the general population;

**Abbreviations:** FC= First confirmed case of COVID-19; FD= First confirmed death of COVID-19

**Stringency:** High, Moderate, Low

**Benchmark Dates:** Date case benchmark reached (0.1 cases per 1 million inhabitants) Date death benchmark reached (0.1 deaths per 1 million inhabitants)

**Source:** Guatemala: M1 (55), M2 (56), M3 (56), M4 (1), M5 (56), M6 (57), M7 (58), M8 (58), M9 (59), M10 (60–62), M11 (49,63), M12 (64), M13 (65–67), M15 (50), M16 (51,65,67–69). South Korea: M1 (75,76), M2 (77), M3 (78), M4 (79), M6 (80), M7 (80), M8 (81), M9 (59), M10 (82), M11 (83), M12 (84), M13 (85), M14 (41,52), M15 (86,87), M16 (88)
3. Healthcare Sector Responses

3.1 Test

As in comparator countries, Guatemala has open public testing that includes asymptomatic individuals. Guatemala has a comparable number of laboratory facilities able to process COVID-19 tests to South Korea. Guatemala also created additional testing centres, and community screening and testing sites have been created with linkage to doctors using telemedicine.

Table 5. Screening and testing measures

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Guatemala</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>National Testing Policy</td>
<td>Open public testing (incl. asymptomatic) (89).</td>
<td>Open public testing (incl. asymptomatic) (89).</td>
<td></td>
</tr>
<tr>
<td>3.2</td>
<td>Tests per confirmed case</td>
<td>Undetermined</td>
<td>209.1 (89)</td>
<td>136.9 (90)</td>
</tr>
<tr>
<td>3.3</td>
<td>Institutions with lab capacity to process COVID-19 tests</td>
<td>83 (91)</td>
<td>96 (92)</td>
<td>13 (93)</td>
</tr>
<tr>
<td>3.4</td>
<td>Type of screening centres to administer COVID-19 tests</td>
<td>Hospital and community (94).</td>
<td>Hospital and community (95).</td>
<td>Hospital and community (96).</td>
</tr>
<tr>
<td>3.5</td>
<td>Description of screening and testing measures</td>
<td>Screening and testing decision algorithm based on priority groups (97); community testing of shopkeepers in outbreak areas (98); creation of community detection and screening sites using telemedicine (99); temporary testing sites; private hospitals and private laboratories offer COVID-19 screening and testing (100).</td>
<td>Drive through testing facilities; expanded testing centres to alleviate pressure on hospitals and clinics (95).</td>
<td>Local test kit production (101); obligatory testing if admitted to health care facility (70); testing offered at home; random testing in areas with outbreaks.</td>
</tr>
</tbody>
</table>
3.2 Trace

Compared to South Korea and Uruguay, Guatemala has a limited contact tracing policy, and not all confirmed or suspected cases undergo contact tracing. Guatemala and Uruguay have similar contact tracing strategies where cases are identified and then undergo self-directed isolation, which South Korea expands upon by requiring mandatory quarantine.

Table 6. Contact tracing policies

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Guatemala</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.6</td>
<td>Contact tracing policy</td>
<td>Limited tracing (102).</td>
<td>All cases without exception (89).</td>
<td>All cases without exception (103).</td>
</tr>
<tr>
<td>3.7</td>
<td>Contact tracing strategy</td>
<td>Case identification and isolation plus contact tracing (102).</td>
<td>Case identification, contact tracing, and mandatory quarantine for identified confirmed and suspected cases (104).</td>
<td>Case identification and self-directed isolation plus contact tracing (103).</td>
</tr>
<tr>
<td>3.8</td>
<td>Other policies or mechanisms</td>
<td>Pilot program for contact tracing in an urban district in the municipality of Guatemala began on August 12, 2020 (102).</td>
<td>Opened 600 screening centres (105); Epidemic Intelligence Surveillance officers permitted to draw on data sources including facility visits, credit card transaction logs, cellular GPS data, and CCTV; patient trajectories were made public (95,104).</td>
<td>App to alert individuals when they were in close proximity to a person with COVID-19 (106); telehealth and a centralized database for epidemiological reporting (70); synchronized case management and follow-up (107).</td>
</tr>
</tbody>
</table>

3.3 Treat

Guatemala had fewer intensive care unit (ICU) beds and ventilators than the comparator countries before COVID. However, similar to Uruguay, Guatemala increased the number of available beds through the conversion of public facilities, the creation of mobile hospitals, and by purchasing and securing donations of ventilators.

Table 7. Health system capacity and adaptations

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Guatemala</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.9</td>
<td>Daily outpatient visits: Jan 2020 to July 2020</td>
<td>Undetermined</td>
<td>Undetermined</td>
<td>Undetermined</td>
</tr>
<tr>
<td>3.10</td>
<td>Existing (pre-COVID) ICU capacity</td>
<td>1.26 per 100,000 population (43)</td>
<td>10.6 per 100,000 population (108)</td>
<td>19.9 per 100,000 population (109)</td>
</tr>
<tr>
<td>3.11</td>
<td>ICU capacity August 2020</td>
<td>1.92 per 100,000 population (43)</td>
<td>Undetermined</td>
<td>23 per 100,000 (93)</td>
</tr>
</tbody>
</table>
Table 8. Health care workforce, adaptations and supplies

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Guatemala</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.16</td>
<td>Existing (pre-COVID) doctors</td>
<td>0.4 per 1,000 population</td>
<td>2.4 per 1,000 population</td>
<td>5.1 per 1,000 population</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(109)</td>
<td>(118)</td>
<td>(109)</td>
</tr>
<tr>
<td>3.17</td>
<td>Existing (pre-COVID) nurses</td>
<td>0.1 per 1,000 population</td>
<td>7.2 per 1,000 population</td>
<td>1.9 per 1,000 population</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(109)</td>
<td>(119)</td>
<td>(109)</td>
</tr>
<tr>
<td>3.18</td>
<td>COVID-19 health workforce adaptations</td>
<td>Medical students who have</td>
<td>Additional workers</td>
<td>Re-training of staff to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>graduated and foreign-trained doctors will not need to go through the administrative licensing process and may practice (120,121).</td>
<td>trained in contact tracing. Additional healthcare workers hired or volunteered to aid in the crisis in some cities (104).</td>
<td>provide ICU care; expedition of registration of healthcare workers with the Ministry of Health; expedition of registration for medical trainees; program to allow public officials to perform as volunteers in different actions coordinated by the Ministry of Public Health (70,122).</td>
</tr>
</tbody>
</table>

To increase the health workforce, Guatemala, like Uruguay, has allowed medical students to support the COVID-19 response. In addition, foreign-trained doctors have been allowed to practice without going through the administrative licensing process. Similar to comparator countries, Guatemala has experienced PPE shortages and attempted to secure supply through domestic production and securing donations.
<table>
<thead>
<tr>
<th>3.19</th>
<th>PPE for healthcare workers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PPE Availability:</strong></td>
<td>Ongoing shortages in healthcare facilities (123).</td>
</tr>
<tr>
<td><strong>Adaptations:</strong></td>
<td>No mask reuse or reprocessing guidance publicly available.</td>
</tr>
<tr>
<td><strong>Domestic production:</strong></td>
<td>In June the government procured equipment to produce medical masks (124).</td>
</tr>
<tr>
<td><strong>Purchasing/Procurement:</strong></td>
<td>Donation of masks and medical equipment from private suppliers, international organizations, and other countries (125).</td>
</tr>
<tr>
<td><strong>PPE Availability:</strong></td>
<td>Early shortages limited by penalizing export and hoarding of PPE.</td>
</tr>
<tr>
<td><strong>Adaptations:</strong></td>
<td>None</td>
</tr>
<tr>
<td><strong>Domestic Production:</strong></td>
<td>Doubled domestic production of PPE goods.</td>
</tr>
<tr>
<td><strong>Purchasing/Procurement:</strong></td>
<td>Government purchased 80% of the mask supply from Korean manufacturers early in the pandemic to secure mask supply (104).</td>
</tr>
<tr>
<td><strong>PPE Availability:</strong></td>
<td>Initial shortage of medical supplies (Feb 2020) (126).</td>
</tr>
<tr>
<td><strong>Adaptations:</strong></td>
<td>Guidance on extended use and reprocessing of N95 respirators by healthcare staff (127).</td>
</tr>
<tr>
<td><strong>Domestic production:</strong></td>
<td>Coordinated manufacturing of masks by the Ministry of Defence (128).</td>
</tr>
<tr>
<td><strong>Purchasing/Procurement:</strong></td>
<td>Central government coordinated purchasing of PPE and medical supplies (129).</td>
</tr>
</tbody>
</table>
References (Guatemala)


43. Guatemala - Communication with WB project manager.


81. Ministry of Health & Welfare. IMS meeting for Novel Coronavirus presided over by the Prime Minister [Internet]. 2020 [cited 2020 Oct 7]. Available from: 


87. Validation with partner in South Korea. 2020.


93. MSP, Uruguay, direct information to WB manager of Project COVID 19- P173876 -IBRD 9125-UY.


HAITI

Country Background

Haiti registered its first confirmed case of COVID-19 on March 19, 2020 (1) – citizen who had recently traveled to France (2). The same day, after the confirmation of the second case, the president declared a state of emergency nationwide and introduced broad containment measures to reduce community transmission of the virus (3). To reactivate the formal sector of the economy, the Haitian government announced, on April 15, the reopening of the textile industry (3). On July 20, 2020, the state of emergency was lifted (4,5).

Table 1 shows the total number of confirmed cases and deaths per 100,000 inhabitants in Haiti compared to Uruguay and South Korea, as of November 1, 2020. Figure 1 shows the average number of daily new cases and deaths in Haiti by epidemiological week, as of November 1, 2020.

Table 1. Total number of confirmed cases and deaths per 100,000 inhabitants in Haiti compared to Uruguay and South Korea, as of November 1, 2020

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Haiti</th>
<th>Uruguay</th>
<th>South Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of confirmed cases per 100,000</td>
<td>79</td>
<td>90</td>
<td>52</td>
</tr>
<tr>
<td>Total number of confirmed deaths per 100,000</td>
<td>2.0</td>
<td>1.7</td>
<td>0.91</td>
</tr>
</tbody>
</table>

Source: Our World in Data (6).

Figure 1. Average of daily new cases and deaths in Haiti by epidemiological week, as of November 1, 2020

Source: Data from Our World in Data, Coronavirus Pandemic (COVID-19) (6). Note: We considered December 29, 2019, to January 4, 2020, as the first epidemiological week and we only considered confirmed deaths due to COVID-19 (7).
1. Emergency Preparedness and Response Governance

1.1 Emergency Preparedness

Unlike South Korea and Uruguay, Haiti lacks legislation regarding communicable diseases and quarantines. While there is a general pandemic preparedness plan, and other plans related to water-borne diseases, Haiti lacks a severe acute respiratory infection (SARI)/influenza pandemic preparedness plan. However, Haiti does have a National Epidemiologic Surveillance network, a national sentinel surveillance for communicable diseases system that is comparable to Uruguay. However, there is limited preparedness for emerging zoonotic disease surveillance relative to the comparator countries.

**Table 2. Emergency preparedness indicators**

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Haiti</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Existing legislation</td>
<td>No.</td>
<td>The <em>Infectious Disease Control and Prevention Act</em> and the <em>Quarantine Act</em> establishes mandatory disease notification and quarantine measures (8), as well as the <em>Fundamental Act</em> on National Crisis Management, which includes the Disaster Management Standards Manual, the Crisis Response Manual, and the Situation Action Manual (9).</td>
<td>Law No. 9,202 establishes the measures necessary to maintain collective health (10,11) and Decree No.41/012 establishes mandatory disease notification including outbreak events.</td>
</tr>
<tr>
<td>1.2</td>
<td>Existing SARI preparedness plans</td>
<td>No – There is a general pandemic preparedness plan but not specific to SARI (12).</td>
<td>Middle East Respiratory Syndrome Response Manual (13).</td>
<td>National integrated preparedness plan for an influenza pandemic; Protocol for universal surveillance of severe acute respiratory infection in Uruguayan hospitals (2008) (14).</td>
</tr>
<tr>
<td>1.3</td>
<td>Existing One Health or zoonotic coordination</td>
<td>No (15).</td>
<td>Korea Disease Control and Prevention Agency (KDCA): Division of Zoonotic and Vector Borne Disease Control (16).</td>
<td>National integrated preparedness plan for an influenza pandemic describes intersectoral integration between the Ministries of Public Health and Livestock at the central and departmental level (17).</td>
</tr>
<tr>
<td>1.4</td>
<td>Pandemic surveillance</td>
<td>National Epidemiologic Surveillance Network includes 652 sites (out of Korea Influenza and Respiratory Virus Surveillance System (KINRESS); Clinical Health Surveillance Department (DEVISA); National Emergency System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5</td>
<td>Pandemic surveillance systems (animal health)</td>
<td>Not for emerging zoonotic diseases or pandemic influenza, only the Haiti Animal Rabies Surveillance Program (22).</td>
<td>National Institute of Health – Centre for Infectious Disease Research (Division of Bacterial Disease Research, or Division of Emerging Infectious Disease and Vector Research) and emergency coordination for zoonotic disease in coordination with the Ministry of Agriculture, Food, and Rural Affairs (23).</td>
<td>National Animal Health Emergency System (SINEASA) (24).</td>
</tr>
<tr>
<td>1.6</td>
<td>Teams of experts in SARI/influenza or emerging infectious diseases</td>
<td>No.</td>
<td>Yes – For emerging infectious diseases and for public health emergency preparedness response through the KDCA (16).</td>
<td>Emergency Operational Committee convened a commission of national technical experts for pandemic influenzas including clinicians, academics, virologists, and epidemiologists (17).</td>
</tr>
<tr>
<td>1.7</td>
<td>National PPE stockpile</td>
<td>No.</td>
<td>Yes – Following the 2015 MERS outbreak, changes were introduced to adopt a more dynamic stockpiling approach with a system for real time stockpiling management currently under implementation as well as a 5-year National Strategic Stockpile.</td>
<td>Yes – The Administration of the State Health Services (ASSE) and Ministry of Public Health purchased PPE, centralized stock, and ensured distribution to both the public and private sector (17).</td>
</tr>
</tbody>
</table>
1.2 COVID-19 Response Governance

The COVID-19 response in Haiti, like South Korea and Uruguay, has featured leadership from the highest levels of government. Unlike comparator countries, Haiti’s response has included coordination between the government, national and international non-governmental organizations (NGOs) and United Nations (UN) agencies. Haiti, like Uruguay, has centralized COVID-19 policymaking. Similar to South Korea, Implementation is mixed between the central and regional governments in Haiti.

Table 3. COVID-19 response governance indicators

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Haiti</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.8</td>
<td>President/Prime Minister leadership</td>
<td>Yes – The president and prime minister has played central roles (25,26).</td>
<td>Yes – The president and prime minister have both played central roles.</td>
<td>Yes – the president has been a central figure in the response and has held regular press conferences to communicate the government’s approach (“Prevent, react, control”) (27–30).</td>
</tr>
<tr>
<td>1.9</td>
<td>Establishment of taskforce or government-wide committee</td>
<td>Yes – Large-scale health sector meetings begun in March to coordinate response to COVID-19 in conjunction with the Ministry of Public Health and Population, national and international NGOs, and UN agencies (27–31).</td>
<td>Yes – Using existing public health emergency response structures which activated high-level national response protocols to ensure a cross-society and pan-governmental approach including the prime minister, the Ministry of the Interior and Safety, Ministry of Health and Welfare, Government Office for Policy, and the National Security Council (23).</td>
<td>Yes – Departmental Coordination Centers of Emergencies (Cecoed) that form part of the Departmental Emergency Committee (CDE) (30); comprised of representatives of the Departmental Administration, the Ministry of Social Development, the Ministry of National Defense, the National Fire Department, the National Police, and the Ministry of Public Health (32).</td>
</tr>
<tr>
<td>1.10</td>
<td>Leadership from Chief Medical Officer of Health or another top scientific official</td>
<td>No.</td>
<td>Yes (33).</td>
<td>Yes – Director General of Health advises the Minister of Public Health and the council of ministers on COVID-19 matters (34,35).</td>
</tr>
<tr>
<td>1.11</td>
<td>Pandemic funding</td>
<td>Yes (36) – To fund the Ministry of Public Health and Population response to COVID-19.</td>
<td>Yes – 4 stages of fiscal measures beginning with immediate support for preventive and medical services, small merchants and small-to-medium enterprises, and financial support for individuals</td>
<td>Yes – COVID solidarity fund (39).</td>
</tr>
<tr>
<td>1.12</td>
<td>Level of Government that decides policy</td>
<td>Central government – Ministry of Public Health and Population (31).</td>
<td>Mixed – Horizontal coordination at the strategic level facilitated through the Central Safety Management Committee chaired by the prime minister; Ministry of Interior and Safety Public Health Disaster Response Division coordinated closely with Ministry of Health and Welfare (23).</td>
<td>Central – The president of the republic is advised by an Honorary Scientific Advisory Group (GACH) (40); It is the responsibility of the Ministry of Public Health (MSP) (34,41) to lead the national response, carry out risk assessments, and define the need to convene other organizations for the multisectoral response.</td>
</tr>
<tr>
<td>1.13</td>
<td>Level of Government that implements policy</td>
<td>Mixed – Departmental coordination cells are active in all 10 departments. Response is being implemented at both central and departmental level (36).</td>
<td>Mixed – Central government along with provincial and local governments implement the infectious disease prevention and control policy, together with a network of 256 Public Health Centers and medical institutions (23,42).</td>
<td>Central (34,43).</td>
</tr>
</tbody>
</table>
2. Timely Implementation of Effective Interventions to Prevent the Spread of COVID-19

The comparative exercise revealed several strengths in the response to COVID-19. For most of the indicators assessed, the level of stringency was as high in Haiti as in Uruguay and South Korea. However, as depicted in the Figures 2A and 2B, the timeliness of implementation lagged in Haiti in four out of 16 interventions compared to Uruguay and South Korea.

- Haiti introduced its strictest international travel restrictions one month after the country reached 0.1 cases per million people, nearly one month later than Uruguay and South Korea.
- Haiti introduced income relief measures (income support and debt relief) about two months after the country reached 0.1 cases per million people, nearly two months later than Uruguay and two weeks later than South Korea.
- Haiti introduced programs to support access to personal protective equipment (PPE) in the general population, including the provision of face masks to all suspect cases (44) earlier than Uruguay but about one month later than South Korea.

Based on the experiences of South Korea and Uruguay, there are some actions that could strengthen the COVID-19 response in Haiti.

- South Korea and Uruguay have introduced measures to support housing expenses. South Korea shared 50% of the cost of rent with landlords and offered them consumption vouchers and tax exemptions if landlords voluntarily offer a rental discount to tenants (38,45). Uruguay subsidized up to 50% of the rent for individuals enrolled in the unemployment insurance and started agreements to make mortgage payments more flexible (through discounts or payment deferrals) (46,47).
- South Korea and Uruguay have introduced programs to support self-isolation. South Korea has provided quarantine hotels and special facilities to individuals who might have difficult self-isolating at home (48). Uruguay implemented a program to transfer elderly homeless people to permanent shelters, the government increased the budget to create new shelters, and allowed people to stay in these all day (49).
- Uruguay has adopted broad debt and contract relief measures for households including the deferral and postponement of loan payments, new lines of credit with flexible conditions, loans for small and medium-sized businesses, and subsidy of electricity for some types of business (49). Haiti could strengthen its current debt relief measures (postponement of payment of loans and income tax as well as the temporary suspension of interbank fees) (50,51).
- South Korea and Uruguay have introduced strict stay-at-home measures. Both countries made mandatory to stay at home unless an essential need (e.g. seeking medical care) (49,52). In Haiti, individuals were forced to stay at home through a night curfew only (8:00 pm to 5:00 am) (53,54).
**Table 4. Stringency levels in the strictest interventions in Haiti compared to Uruguay and South Korea**

<table>
<thead>
<tr>
<th>Indicator code</th>
<th>Indicator</th>
<th>LAC country</th>
<th>Comparators</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1</td>
<td>School closing</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M2</td>
<td>Workplace closing</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>M3</td>
<td>Cancellation of public events</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M4</td>
<td>Recommendations on gatherings</td>
<td>High</td>
<td>No measures</td>
</tr>
<tr>
<td>M5</td>
<td>Close public transport</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>M6</td>
<td>Stay at home</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>M7</td>
<td>Restrictions on internal movement</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>M8</td>
<td>International travel restrictions</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M9</td>
<td>Public info campaigns</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M10</td>
<td>Income support</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>M11</td>
<td>Debt/contract relief for households</td>
<td>Moderate</td>
<td>High</td>
</tr>
<tr>
<td>M12</td>
<td>Use of masks or face coverings</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M13</td>
<td>Programs to support food security</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M14</td>
<td>Programs to support housing expenses</td>
<td>No measures</td>
<td>High</td>
</tr>
<tr>
<td>M15</td>
<td>Programs to support self-isolation</td>
<td>No measures</td>
<td>High</td>
</tr>
<tr>
<td>M16</td>
<td>Programs to support access to PPE in the general population</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>

**Abbreviations:** PPE = personal protective equipment  
**Sources:** Haiti: M1 (55), M2 (56), M3 (57,58), M4 (53), M5 (59), M6 (53), M7 (57,58), M8 (60), M9 (61), M10 (50,62), M11 (50,51), M12 (63,64), M13 (62), M16 (44). Uruguay: M1 (65), M2 (49), M3 (49), M5 (66), M6 (49), M7 (49), M8 (49,67,68), M9 (61), M10 (49), M11 (49), M12 (69), M13 (49), M14 (46,47), M15 (49), M16 (49). South Korea: M1 (70,71), M2 (72), M3 (73), M4 (74), M6 (52), M7 (52), M8 (75), M9 (61), M10 (76), M11 (77), M12 (78), M13 (79), M14 (38,45), M15 (48,80), M16 (81)
Figure 2A. Timeline of the introduction of measures in Haiti compared to Uruguay

**Indicators code:** M1= School closing; M2= Workplace closing; M3= Cancellation of public events; M4= Recommendations on gatherings; M5= Close public transport; M6= Stay at home; M7= Restrictions on internal movement; M8= International travel restrictions; M9= Public info campaigns; M10= Income support; M11= Debt/contract relief for households; M12= Use of masks or face coverings; M13= Programs to support food security; M14= Programs to support housing expenses; M15= Programs to support self-isolation for people in need of; M16= Programs to support the access to personal protection equipment in the general population.

**Abbreviations:** FC= First confirmed case of COVID-19; FD= First confirmed death of COVID-19

**Stringency:** High, Moderate, Low

**Benchmark Dates:** Date case benchmark reached (0.1 cases per 1 million inhabitants) Date death benchmark reached (0.1 deaths per 1 million inhabitants)

**Sources:** Haiti: M1 (55), M2 (56), M3 (57,58), M4 (53), M5 (59), M6 (53), M7 (57,58), M8 (60), M9 (61), M10 (50,62), M11 (50,51), M12 (63,64), M13 (62), M16 (44). Uruguay: M1 (65), M2 (49), M3 (49), M5 (66), M6 (49), M7 (49), M8 (49,67,68), M9 (61), M10 (49), M11 (49), M12 (69), M13 (49), M14 (46,47), M15 (49), M16 (49).
**Figure 2B.** Timeline of the introduction of measures in Haiti compared to South Korea

**Indicators code:** M1= School closing; M2= Workplace closing; M3= Cancellation of public events; M4= Recommendations on gatherings; M5= Close public transport; M 6= Stay at home; M7= Restrictions on internal movement; M 8= International travel restrictions; M9= Public info campaigns; M10= Income support; M11= Debt/contract relief for households; M12= Use of masks or face coverings; M13= Programs to support food security; M14= Programs to support housing expenses; M15= Programs to support self-isolation for people in need of; M16= Programs to support the access to personal protection equipment in the general population;

**Abbreviations:** FC= First confirmed case of COVID-19; FD= First confirmed death of COVID-19

**Stringency:** High | Moderate | Low

**Benchmark Dates:** Date case benchmark reached (0.1 cases per 1 million inhabitants) | Date death benchmark reached (0.1 deaths per 1 million inhabitants)

**Sources:** Haiti: M1 (55), M2 (56), M3 (57,58), M4 (53), M5 (59), M6 (53), M7 (57,58), M8 (60), M9 (61), M10 (50,62), M11 (50,51), M12 (63,64), M13 (62), M16 (44). South Korea: M1 (70,71), M2 (72), M3 (73), M4 (74), M5 (75), M6 (52), M7 (52), M8 (75), M9 (61), M10 (76), M11 (77), M12 (78), M13 (79), M14 (38,45), M15 (48,80), M16 (81)
3. Healthcare Sector Responses

3.1 Test

The national testing policy in Haiti differs from South Korea and Uruguay in that testing is open only to those individuals who are symptomatic and meet criteria. These restrictions do not apply at land borders and ports of call where there is open testing, however. Haiti reports 10.9 tests per confirmed case, representing a larger burden of COVID-19 in the community compared to South Korea and Uruguay. Testing is conducted in health care settings and at ports of call with 9 labs equipped to process COVID-19 tests.

Table 5. Screening and testing measures

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Haiti</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>National Testing Policy</td>
<td>Those with symptoms AND meet criteria (e.g. case contacts, healthcare workers, admitted to hospital, travel history) (82).</td>
<td>Open public testing (incl. asymptomatic) (82).</td>
<td>Open public testing (incl. asymptomatic) (82).</td>
</tr>
<tr>
<td>3.2</td>
<td>Tests per confirmed case</td>
<td>10.9 (83)</td>
<td>209.1 (82)</td>
<td>136.9 (84)</td>
</tr>
<tr>
<td>3.3</td>
<td>Institutions with lab capacity to process COVID-19 tests</td>
<td>9 (85)</td>
<td>96 (86)</td>
<td>13 (87)</td>
</tr>
<tr>
<td>3.4</td>
<td>Type of screening centres to administer COVID-19 tests</td>
<td>Hospital and community (88).</td>
<td>Hospital and community (89).</td>
<td>Hospital and community (90).</td>
</tr>
<tr>
<td>3.5</td>
<td>Description of screening and testing measures</td>
<td>Testing at country points of entry (85).</td>
<td>Drive through testing facilities; expanded testing centres to alleviate pressure on hospitals and clinics (89).</td>
<td>Local test kit production (91); obligatory testing if admitted to health care facility (49); testing offered at home; random testing in areas with outbreaks.</td>
</tr>
</tbody>
</table>
3.2 Trace

Compared to South Korea and Uruguay, Haiti has a limited contact tracing policy where not all confirmed or suspected cases undergo contact tracing. However, Haiti and Uruguay have similar contact tracing strategies where cases are identified and then undergo self-directed isolation, while South Korea expands upon this requiring mandatory quarantine.

Table 6. Contact tracing policies

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Haiti</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.6</td>
<td>Contact tracing policy</td>
<td>Limited tracing (82).</td>
<td>All cases without exception (82).</td>
<td>All cases without exception (92).</td>
</tr>
<tr>
<td>3.7</td>
<td>Contact tracing strategy</td>
<td>Case identification and self-directed isolation plus contact tracing (93).</td>
<td>Case identification, contact tracing, and mandatory quarantine for identified confirmed and suspected cases (94).</td>
<td>Case identification and self-directed isolation plus contact tracing (92).</td>
</tr>
<tr>
<td>3.8</td>
<td>Other policies or mechanisms</td>
<td>Tracing teams plus investigation teams in each region. Follow-up can be at hospital (COVID institutions) if contact has symptoms, at home or in isolation (if available) (85). Follow-up is done by the regional teams; call centres for contact tracing (85).</td>
<td>Opened 600 screening centres (95); Epidemic Intelligence Surveillance officers permitted to draw on data sources including facility visits, credit card transaction logs, cellular GPS data, and CCTV; patient trajectories were made public (89,94).</td>
<td>App to alert individuals when they were in close proximity to a person with COVID-19 (96); telehealth and a centralized database for epidemiological reporting (49); synchronized case management and follow-up (97).</td>
</tr>
</tbody>
</table>
### 3.3 Treat

The number of outpatient visits in Haiti has decreased by 17.20% between January and July 2020. Like South Korea and Uruguay, Haiti has expanded the number of intensive care units (ICU) beds available and has procured supplies, such as gasometers and monitoring equipment to support ongoing care of hospitalized patients with COVID-19. However, the supply of ICU beds remains lower than in comparator countries and there is less evidence of widespread adaptation and creation of additional beds.

Table 7. Health system capacity and adaptations

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Haiti</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.9</td>
<td>Daily outpatient visits: Jan 2020 to July 2020</td>
<td>01/20: 1,014,751 visits; 07/20: 840,169; (17.20% decrease)</td>
<td>Undetermined</td>
<td>Undetermined</td>
</tr>
<tr>
<td>3.10</td>
<td>Existing (pre-COVID) ICU capacity</td>
<td>1.1 per 100,000 (99)</td>
<td>10.6 per 100,000 population (100)</td>
<td>19.9 per 100,000 population (101)</td>
</tr>
<tr>
<td>3.11</td>
<td>ICU capacity August 2020</td>
<td>1.3 per 100,00 (102)</td>
<td>Undetermined</td>
<td>23 per 100,000 (87)</td>
</tr>
<tr>
<td>3.12</td>
<td>ICU occupation rate August 2020</td>
<td>9% (103)</td>
<td>Undetermined</td>
<td>52.4% (87)</td>
</tr>
<tr>
<td>3.13</td>
<td>Existing (pre-COVID) ventilator capacity</td>
<td>0.6 per 100,000 (99)</td>
<td>19.11 per 100,000 (104)</td>
<td>18.8 per 100,000 (87)</td>
</tr>
<tr>
<td>3.14</td>
<td>Ventilator capacity August 2020</td>
<td>0.6 per 100,000 (98)</td>
<td>Undetermined</td>
<td>Undetermined</td>
</tr>
<tr>
<td>3.15</td>
<td>COVID-19 ICU &amp; ventilator adaptations</td>
<td>No further adaptations.</td>
<td>Using portable negative pressure devices, the government was able to rapidly expand the supply of temporary airborne infection isolation rooms. In Daegu, officials created about 400 additional negative pressure beds during the crisis (94).</td>
<td>In March the government expanded the number of ICU beds and increased the amount of specialized equipment and respirators in healthcare facilities nationally (105,106).</td>
</tr>
</tbody>
</table>

Haiti has fewer health care workers than South Korea and Uruguay. However, there have been concerted efforts to train community health workers on infection prevention and control measures to prevent the spread of COVID-19 in communities they serve. At the time of this report, Haiti had not reported shortages of PPE and has been receiving these supplies as foreign aid.
### Table 8. Health care workforce, adaptations and supplies

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Haiti</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.16</td>
<td>Existing (pre-COVID) doctors</td>
<td>0.2 per 1,000 population (101)</td>
<td>2.4 per 1,000 population (107)</td>
<td>5.1 per 1,000 population (101)</td>
</tr>
<tr>
<td>3.17</td>
<td>Existing (pre-COVID) nurses</td>
<td>0.7 per 1,000 population (101)</td>
<td>7.2 per 1,000 population (108)</td>
<td>1.9 per 1,000 population (101)</td>
</tr>
<tr>
<td>3.18</td>
<td>COVID-19 health workforce adaptations</td>
<td>At least 1830 frontline workers have been trained on infection prevention and control and COVID-19 management; at least 305 healthcare workers have been trained on oxygen therapy (85).</td>
<td>Additional workers trained in contact tracing. Additional healthcare workers hired or volunteered to aid in the crisis in some cities (94).</td>
<td>Re-training of staff to provide ICU care; expedition of registration of healthcare workers with the Ministry of Health; expedition of registration for medical trainees; program to allow public officials to perform as volunteers in different actions coordinated by the Ministry of Public Health (41,49)</td>
</tr>
</tbody>
</table>
References (Haiti)


87. MSP, Uruguay, direct information to WB manager of Project COVID 19- P173876 -IBRD 9125-UY.
98. Haiti - National Information Service Haiti, direct information to WB manager of Project.
HONDURAS

Country Background

Honduras registered its first two confirmed cases of COVID-19 on March 11, 2020, in citizens who had recently traveled to Spain and Switzerland (1). On March 12, 2020, the president of Honduras declared a national state of health emergency to strengthen the surveillance, prevention, and provision of care (2). The state of emergency introduced several containment measures and strategies for the enhanced allocation of resources (2,3).

On June 3, 2020, the government introduced a graduated and targeted plan for reopening (Plan Nacional para una Reapertura Inteligente Gradual y Progresiva de la Economía y los Sectores Sociales de Honduras) (4). Municipalities were classified into three regions based on epidemiological indicators, reopening of economic activities was allowed according to the status of these indicators (5). Table 1 shows the total number of confirmed cases and deaths per 100,000 inhabitants in Honduras compared to Uruguay and South Korea, as of November 1, 2020. Figure 1 shows the average of daily new cases and deaths in Honduras by epidemiological week, as of November 1, 2020.

Table 1. Total number of confirmed cases and deaths per 100,000 inhabitants in Honduras compared to Uruguay and South Korea, as of November 1, 2020

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Honduras</th>
<th>Uruguay</th>
<th>South Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of confirmed cases per 100,000</td>
<td>983</td>
<td>90</td>
<td>52</td>
</tr>
<tr>
<td>Total number of confirmed deaths per 100,000</td>
<td>27.0</td>
<td>1.7</td>
<td>0.91</td>
</tr>
</tbody>
</table>

Source: Our World in Data (6)

Figure 1. Average of daily new cases and deaths in Honduras by epidemiological week, as of November 1, 2020.

Source: Data from Our World in Data, Coronavirus Pandemic (COVID-19) (6). Note: We considered December 29, 2019, to January 4, 2020, as the first epidemiological week and we only considered confirmed deaths due to COVID-19 (7).
1. Emergency Preparedness and Response Governance

1.1 Emergency Preparedness

Honduras has comparable emergency preparedness to both Uruguay and South Korea, particularly in regard to existing legislation for pandemic response, severe acute respiratory infection (SARI)/influenza pandemic preparedness plans and surveillance systems to monitor both human and animal health. However, Honduras does not have a coordination body spanning human and animal health. Honduras also did not have a stockpile of personal protective equipment (PPE).

Table 2. Emergency preparedness indicators

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Honduras</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Existing legislation</td>
<td>Health Code – Title IV Art. 177 outlines epidemiological surveillance and control of infectious diseases; Title V Art.185 establishes protocols for disasters and emergencies (8).</td>
<td>The <em>Infectious Disease Control and Prevention Act</em> and the <em>Quarantine Act</em> establishes mandatory disease notification and quarantine measures (9), as well as the <em>Fundamental Act on National Crisis Management</em>, which includes the Disaster Management Standards Manual, the Crisis Response Manual, and the Situation Action Manual (10).</td>
<td>Law No. 9,202 establishes the measures necessary to maintain collective health (11,12) and Decree No.41/012 establishes mandatory disease notification including outbreak events.</td>
</tr>
<tr>
<td>1.3</td>
<td>Existing One Health or zoonotic coordination</td>
<td>No.</td>
<td>Korea Disease Control and Prevention Agency (KDCA): Division of Zoonotic and Vector Borne Disease Control (15).</td>
<td>National integrated preparedness plan for an influenza pandemic describes intersectoral integration between the Ministries of Public Health and Livestock at the central and departmental level (16).</td>
</tr>
<tr>
<td>1.4</td>
<td>Pandemic surveillance systems (human health)</td>
<td>Sentinel surveillance for SARIIs through 5 hospitals and 3 health centres located in 2 regions,</td>
<td>Korea Influenza and Respiratory Virus Surveillance System (KINRESS); Clinical sentinel surveillance in 200 outpatient</td>
<td>Health Surveillance Department (DEVISA); National Emergency System (SINAE); National Integrated Health</td>
</tr>
</tbody>
</table>
**1.5 Pandemic surveillance systems (animal health)**

| National Service for Agri-food Health and Safety (21). | National Institute of Health - Centre for Infectious Disease Research (Division of Bacterial Disease Research, or Division of Emerging Infectious Disease and Vector Research) and emergency coordination for zoonotic disease in coordination with the Ministry of Agriculture, Food, and Rural Affairs (22). | National Animal Health Emergency System (SINEASA) (23). |

**1.6 Teams of experts in SARI/influenza or emerging infectious diseases**

| Yes – Teams associated with the National Influenza Centre (13). | Yes – For emerging infectious diseases and for public health emergency preparedness response through the KDCA (15). | Emergency Operational Committee convened a commission of national technical experts for pandemic influenzas including clinicians, academicians, virologists, and epidemiologists (16). |

**1.7 National PPE stockpile**

| No. | Yes – Following the MERS outbreak, changes were introduced to adopt a more dynamic stockpiling approach with a system for real time stockpiling management currently under implementation as well as a 5-year National Strategic Stockpile. | Yes – The Administration of the State Health Services (ASSE) and Ministry of Public Health purchased PPE, centralized stock, and ensured distribution to both the public and private sector (16). |

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### 1.2 COVID-19 Response Governance

The COVID-19 response in Honduras, like South Korea and Uruguay, has featured leadership from the highest levels of government including a multi-ministerial committee. The Chief Medical Officer of Health and other top scientific officials are not as involved in COVID-19 leadership as compared to Uruguay. In Honduras, COVID-19 response policies are decided by the central government and enacted by municipal governments.

**Table 3. COVID-19 response governance indicators**
<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Honduras</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.8</td>
<td>President/Prime Minister leadership</td>
<td>Yes – The prime minister has played a central role (24).</td>
<td>Yes – The president and prime minister have both played central roles.</td>
<td>Yes – the president has been a central figure in the response and has held regular press conferences to communicate the government's approach (&quot;Prevent, react, control&quot;) (25–28).</td>
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<tr>
<td>1.9</td>
<td>Establishment of taskforce or government-wide committee</td>
<td>Yes – Council of Ministers (29).</td>
<td>Yes – Using existing public health emergency response structures which activated high-level national response protocols to ensure a cross-society and pan-governmental approach including the prime minister, the Ministry of the Interior and Safety, Ministry of Health and Welfare, Government Office for Policy and the National Security Council (22).</td>
<td>Yes – Departmental Coordination Centers of Emergencies (Cecoed) that form part of the Departmental Emergency Committee (CDE) (28); comprised of representatives of the Departmental Administration, the Ministry of Social Development, the Ministry of National Defense, the National Fire Department, the National Police, and the Ministry of Public Health (30).</td>
</tr>
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<td></td>
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</tr>
<tr>
<td>1.10</td>
<td>Leadership from Chief Medical Officer of Health or another top scientific official</td>
<td>No.</td>
<td>Yes (31).</td>
<td>Yes – Director General of Health advises the Minister of Public Health and the council of ministers on COVID-19 matters (32,33).</td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td>1.11</td>
<td>Pandemic funding</td>
<td>Yes – To fund hiring of human resources for health and humanitarian assistance (34).</td>
<td>Yes – 4 stages of fiscal measures beginning with immediate support for preventive and medical services, small merchants and small-to-medium enterprises, and financial support for individuals quarantined/self-quarantined (35,36).</td>
<td>Yes – COVID solidarity fund (37).</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1.12</td>
<td>Level of Government that decides policy</td>
<td>Central – Specifically the National Risk Management System (SINAGER); National Risk Management System (38).</td>
<td>Mixed – Horizontal coordination at the strategic level facilitated through the Central Safety Management Committee chaired by the prime minister; Ministry of Interior and Safety Public Health Disaster Response Division</td>
<td>Central – The president of the republic is advised by an Honorary Scientific Advisory Group (GACH) (39),. It is the responsibility of the Ministry of Public Health (MSP) (32,40) to lead the national response, carry out risk assessments, and define the need to</td>
</tr>
<tr>
<td>1.13 Level of Government that implements policy</td>
<td>Municipal – Municipal corporations carry out policies enacted by SINAGER such as contact tracing, screening, and PPE purchases. Municipalities also coordinate with the Ministry of Health (SESAL) and the health regions to implement policies.</td>
<td>Mixed – Central government along with provincial and local governments implement the infectious disease prevention and control policy, together with a network of 256 Public Health Centers and medical institutions (22,41).</td>
<td>Central (32,42).</td>
<td></td>
</tr>
</tbody>
</table>
2. Timely Implementation of Effective Interventions to Prevent the Spread of COVID-19

The comparative exercise revealed several strengths in the response to COVID-19 in Honduras: for most of the indicators assessed, the level of stringency was as high in Honduras as in Uruguay and South Korea. However, as depicted in the Figures 2A and 2B, the timeliness of implementation lagged in Honduras in six out of 16 interventions compared to Uruguay, and in one compared to South Korea.

- Honduras introduced income relief measures (income support and debt relief) three weeks after the country reached 0.1 cases per one million population. For example, assignment of resources to support entrepreneurs after the pandemic and reactivate the construction industry (43), moratoriums for tax payments, and prohibition to suspend phone and internet service due to late payments (44–46). This was nearly three weeks later than Uruguay but one month earlier than South Korea.
- Honduras introduced the strictest restrictions for face coverings one month later than Uruguay but nearly five months earlier than South Korea. Although, wearing face masks in South Korea is highly accepted by the public and it was not enforced in all the public spaces during the early stages of the epidemic (47).
- Honduras introduced programs to support access to PPE in the general population (e.g. freezing prices of hygiene products) (48,49) about one month later than South Korea.
- Honduras introduced some of its strictest containment measures (e.g., workplace closing, cancellation of public events, and restrictions on gatherings) about two months earlier than South Korea.
- Honduras introduced programs to support food security (e.g. loans for food producers, freezing the price of basic foods, and delivery of food baskets) (44,48,50) one month earlier than South Korea.

The following are measures taken in Korea and Uruguay to support housing expenses and similar programs to support self-isolation that could be considered in strengthening the COVID-19 response in Honduras:

- South Korea shared 50% of the cost of rent with landlords and offered them consumption vouchers and tax exemptions if landlords voluntarily offer a discount to tenants (51,52). Uruguay subsidized up to 50% of the rent for individuals receiving unemployment insurance and started agreements to make mortgage payments flexible through discounts or payment deferrals (53,54).
- South Korea provided designated support centers to individuals who might have difficult self-isolating at home including inbound travelers (55,56). In Uruguay, the government implemented a program to transfer elderly homeless people to permanent shelters and increased the budget to create new shelters where people are allowed to stay all day (43).
**Table 4.** Stringency levels in the strictest interventions in Honduras and the comparators

<table>
<thead>
<tr>
<th>Indicator code</th>
<th>Indicator</th>
<th>LAC country</th>
<th>Comparators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Honduras</td>
<td>Uruguay</td>
</tr>
<tr>
<td>M1</td>
<td>School closing</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M2</td>
<td>Workplace closing</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>M3</td>
<td>Cancellation of public events</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M4</td>
<td>Recommendations on gatherings</td>
<td>High</td>
<td>No measures</td>
</tr>
<tr>
<td>M5</td>
<td>Close public transport</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>M6</td>
<td>Stay at home</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>M7</td>
<td>Restrictions on internal movement</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M8</td>
<td>International travel restrictions</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M9</td>
<td>Public info campaigns</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M10</td>
<td>Income support</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>M11</td>
<td>Debt/contract relief for households</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M12</td>
<td>Use of masks or face coverings</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M13</td>
<td>Programs to support food security</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M14</td>
<td>Programs to support housing expenses</td>
<td>No measures</td>
<td>High</td>
</tr>
<tr>
<td>M15</td>
<td>Programs to support self-isolation</td>
<td>No measures</td>
<td>High</td>
</tr>
<tr>
<td>M16</td>
<td>Programs to support access to PPE in the general population</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>

**Abbreviations:** PPE = personal protective equipment

**Sources:** Honduras: M1 (57), M2 (58), M3 (57), M4 (59), M5 (59), M6 (60,61), M7 (60,61), M8 (62), M9 (63), M10 (44–46), M11 (44–46), M12 (64), M13 (44,48,50), M16 (48,49). Uruguay: M1 (65), M2 (43), M3 (43), M5 (66), M6 (43), M7 (43), M8 (43,67,68), M9 (63), M10 (43), M11 (43), M12 (69), M13 (43), M14 (53,54), M15 (43), M16 (43). South Korea: M1 (70,71), M2 (72), M3 (73), M4 (74), M6 (75), M7 (75), M8 (76), M9 (63), M10 (77), M11 (78), M12 (79), M13 (80), M14 (36,51), M15 (56,81), M16 (82)
Figure 2A. Timeline of the introduction of measures in Honduras compared to Uruguay

Indicators code: M1= School closing; M2= Workplace closing; M3= Cancellation of public events; M4= Recommendations on gatherings; M5= Close public transport; M6= Stay at home; M7= Restrictions on internal movement; M8= International travel restrictions; M9= Public info campaigns; M10= Income support; M11= Debt/contract relief for households; M12= Use of masks or face coverings; M13= Programs to support food security; M14= Programs to support housing expenses; M15= Programs to support self-isolation for people in need of; M16= Programs to support access to personal protection equipment in the general population.

Abbreviations: FC= First confirmed case of COVID-19; FD= First death confirmed of COVID-19

Stringency: High, Moderate, Low

Benchmark Dates: Date case benchmark reached (0.1 cases per 1 million inhabitants) Date death benchmark reached (0.1 deaths per 1 million inhabitants)

Sources: Honduras: M1 (57), M2 (58), M3 (57), M4 (59), M5 (59), M6 (60,61), M7 (60,61), M8 (62), M9 (63), M10 (44–46), M11 (44–46), M12 (64), M13 (44,48,50), M16 (48,49). Uruguay: M1 (65), M2 (43), M3 (43), M5 (66), M6 (43), M7 (43), M8 (43,67,68), M9 (63), M10 (43), M11 (43), M12 (69), M13 (43), M14 (53,54), M15 (43), M16 (43).
**Figure 2B.** Timeline of the introduction of measures in Honduras compared to South Korea

**Indicators code:** M1= School closing; M2= Workplace closing; M3= Cancellation of public events; M4= Recommendations on gatherings; M5= Close public transport; M 6= Stay at home; M7= Restrictions on internal movements; M8= International travel restrictions; M9= Public info campaigns; M10= Income support; M11= Debt/contract relief for households; M12= Use of masks or face coverings; M13= Programs to support food security; M14= Programs to support housing expenses; M15= Programs to support self-isolation for people in need of; M16= Programs to support access to personal protection equipment in the general population.

**Abbreviations:** FC= First confirmed case of COVID-19; FD= First confirmed death of COVID-19

**Stringency:** High, Moderate, Low

**Benchmark Dates:** Date case benchmark reached (0.1 cases per 1 million inhabitants) Date death benchmark reached (0.1 deaths per 1 million inhabitants)

**Sources:** Honduras: M1 (57), M2 (58), M3 (57), M4 (59), M5 (59), M6 (60,61), M7 (60,61), M8 (62), M9 (63), M10 (44–46), M11 (44–46), M12 (64), M13 (44,48,50), M16 (48,49). South Korea: M1 (70,71), M2 (72), M3 (73), M4 (74), M6 (75), M7 (75), M8 (76), M9 (63), M10 (77), M11 (78), M12 (79), M13 (80), M14 (36,51), M15 (56,81), M16 (82)
3. Healthcare Sector Responses

3.1 Test

Whereas the comparator countries’ national policies are for open public testing, including for asymptomatic individuals, Honduras offers testing only for those with COVID-19 symptoms who had been in contact with a case, were healthcare workers or had travel history. Honduras reports 20 tests per confirmed case, representing a larger burden of COVID-19 in the community compared to South Korea and Uruguay. Honduras has fewer labs with capacity to process COVID-19 tests but has recently established a new laboratory.

Table 5. Screening and testing measures

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Honduras</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>National Testing Policy</td>
<td>Those with symptoms AND meet criteria (e.g. case contacts, healthcare workers, travel history) (83).</td>
<td>Open public testing (incl. asymptomatic) (83).</td>
<td>Open public testing (incl. asymptomatic) (83).</td>
</tr>
<tr>
<td>3.2</td>
<td>Tests per confirmed case</td>
<td>20 (84)</td>
<td>209.1 (83)</td>
<td>136.9 (85)</td>
</tr>
<tr>
<td>3.3</td>
<td>Institutions with lab capacity to process COVID-19 tests</td>
<td>7(86,87)</td>
<td>96 (88)</td>
<td>13 (89)</td>
</tr>
<tr>
<td>3.4</td>
<td>Type of screening centres to administer COVID-19 tests</td>
<td>Hospital and community (90,91).</td>
<td>Hospital and community (92).</td>
<td>Hospital and community (93).</td>
</tr>
<tr>
<td>3.5</td>
<td>Description of screening and testing measures</td>
<td>Community testing and &quot;medical brigades&quot; for screening and testing (94); Online portal to report symptoms; temporary isolation centers for returning residents (95); establishment of a new laboratory (86).</td>
<td>Drive through testing facilities; expanded testing centres to alleviate pressure on hospitals and clinics (92).</td>
<td>Local test kit production (96); obligatory testing if admitted to health care facility (43); testing offered at home; random testing in areas with outbreaks.</td>
</tr>
</tbody>
</table>
3.2 Trace

Compared to South Korea and Uruguay, Honduras has a limited contact tracing policy where not all confirmed or suspected cases undergo contact tracing. However, Honduras and Uruguay had similar contact tracing strategies where cases are identified and then undergo self-directed isolation, while South Korea expands upon this requiring mandatory quarantine. To control the outbreak Honduras created “Epidemiological Fences” which prevented movement in and out of areas with confirmed cases (97).

Table 6. Contact tracing policies

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Honduras</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.6</td>
<td>Contact tracing policy</td>
<td>Limited tracing (83)</td>
<td>All cases without exception (83)</td>
<td>All cases without exception (98)</td>
</tr>
<tr>
<td>3.7</td>
<td>Contact tracing strategy</td>
<td>Case identification and isolation, limited contact tracing (83).</td>
<td>Case identification, contact tracing, and mandatory quarantine for identified confirmed and suspected cases (99).</td>
<td>Case identification and self-directed isolation plus contact tracing (98).</td>
</tr>
<tr>
<td>3.8</td>
<td>Other policies or mechanisms</td>
<td>Early in the outbreak &quot;Epidemiological Fences&quot; were established around areas with confirmed cases (97).</td>
<td>Opened 600 screening centres (100); Epidemic Intelligence Surveillance officers permitted to draw on data sources including facility visits, credit card transaction logs, cellular GPS data, and CCTV; patient trajectories were made public (92,99).</td>
<td>App to alert individuals when they were in close proximity to a person with COVID-19 (101); telehealth and a centralized database for epidemiological reporting (43); synchronized case management and follow-up (102).</td>
</tr>
</tbody>
</table>

3.3 Treat

Between January 2020 and July 2020, there has been a decrease in daily outpatient visits in Honduras. Compared to comparator countries, the country had fewer intensive care unit (ICU) beds and ventilators before COVID, but similar to Uruguay has increased the number of available beds. These beds have been made available through conversion of public facilities, creation of mobile hospitals, and through the purchase and donation of ventilators. Honduras also uses what officials call the “Catracho Method” for inpatient treatment which uses colchicine, anti-inflammatoryatories, tocilizumab, ivermectin, blood thinners, and hydroxychloroquine with high-flow oxygen administration, pronation as well as the MAIZ method for outpatient treatment.

Table 7. Health system capacity and adaptations

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Honduras</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.9</td>
<td>Daily outpatient visits: Jan 2020 to July 2020</td>
<td>01/20: 880,737 visits; 07/20: 552,914 visits. (37.1% decrease)</td>
<td>Undetermined</td>
<td>Undetermined</td>
</tr>
<tr>
<td>3.10</td>
<td>Existing (pre-COVID) ICU capacity</td>
<td>0.19 per 100,000 population (38)</td>
<td>10.6 per 100,000 population(103)</td>
<td>19.9 per 100,000 population (104)</td>
</tr>
</tbody>
</table>
### Table 8. Health care workforce, adaptations and supplies

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Honduras</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.16</td>
<td>Existing (pre-COVID) doctors</td>
<td>0.3 per 1,000 population (104)</td>
<td>2.4 per 1,000 population (113)</td>
<td>5.1 per 1,000 population (104)</td>
</tr>
<tr>
<td>3.17</td>
<td>Existing (pre-COVID) nurses</td>
<td>0.7 per 1,000 population (104)</td>
<td>7.2 per 1,000 population (114)</td>
<td>1.9 per 1,000 population (104)</td>
</tr>
<tr>
<td>3.18</td>
<td>COVID-19 health workforce adaptations</td>
<td>Recruitment of doctors from other countries (115); medical students trained and asked to be transferred</td>
<td>Additional workers trained in contact tracing. Additional healthcare workers hired or</td>
<td>Re-training of staff to provide ICU care; expedition of registration of healthcare workers</td>
</tr>
</tbody>
</table>

Much like Uruguay, Honduras has recruited doctors from other countries and allowed medical students to support the COVID-19 response. Due to PPE shortages, guidance was provided on the extended use and reprocessing of PPE by healthcare staff, an approach also adopted in Uruguay. To ensure PPE supply, the Government of Honduras relied on public procurement through local supplier and manufacturers as well as donations from other countries.
| 3.19 | PPE for healthcare workers | **PPE Availability:** Reports of ongoing front-line shortages (117).  
**Adaptations:** Guidance for reuse of PPE (118).  
**Domestic production:** Local production of masks and PPE (119,120).  
**Purchasing/Procurement:** Government procurement of equipment using state funds; Donation of masks from other countries (121–123). | **PPE Availability:** Early shortages limited by penalizing export and hoarding of PPE.  
**Adaptations:** None  
**Domestic Production:** Doubled domestic production of PPE goods.  
**Purchasing/Procurement:** Government purchased 80% of the mask supply from Korean manufacturers early in the pandemic to secure mask supply (99). | **PPE Availability:** Initial shortage of medical supplies (Feb 2020) (124).  
**Adaptations:** Guidance on extended use and reprocessing of N95 respirators by healthcare staff (125).  
**Domestic production:** Coordinated manufacturing of masks by the Ministry of Defence (126).  
**Purchasing/Procurement:** Central government coordinated purchasing of PPE and medical supplies (127). |
References (Honduras)


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81. Validation with partner in South Korea. 2020.


PANAMA

Country Background

Panama registered its first confirmed case of COVID-19 on March 9, 2020, - a person who had recently traveled to Spain (1). On March 13, 2020 the government declared a national state of emergency (2). Several measures were introduced immediately to reduce community transmission of the virus (2). On August 25, the government announced the plan (Plan Actualizado de Reapertura Nacional-Provincial) for the gradual reactivation of the economy based on epidemiological indicators and health system capacity (3).

Table 1 shows the total number of confirmed cases and deaths per 100,000 inhabitants in Panama compared to Uruguay and South Korea, as of November 1, 2020. Figure 1 shows the average of daily new cases and deaths in Panama by epidemiological week, as of November 1, 2020.

Table 1. Total number of confirmed cases and deaths per 100,000 inhabitants in Panama compared to Uruguay and South Korea, as of November 1, 2020

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Panama</th>
<th>Uruguay</th>
<th>South Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of confirmed cases per 100,000</td>
<td>3096</td>
<td>90</td>
<td>52</td>
</tr>
<tr>
<td>Total number of confirmed deaths per 100,000</td>
<td>62.6</td>
<td>1.7</td>
<td>0.91</td>
</tr>
</tbody>
</table>

Source: Our World in Data (4)

Figure 1. Average of daily new cases and deaths in Panama by epidemiological week, as of November 1, 2020.

Source: Data from Our World in Data, Coronavirus Pandemic (COVID-19) (4). Note: We considered December 29, 2019, to January 4, 2020, as the first epidemiological week and we only considered confirmed deaths due to COVID-19 (5).
1. Emergency Preparedness and Response Governance

1.1 Emergency Preparedness

Panama has similar emergency preparedness to comparator countries in regard to legislation and existing preparedness plans for severe acute respiratory infections (SARI) or influenza. However, unlike these comparator countries, Panama lacks a coordinated body to respond to zoonotic diseases and the extent of zoonotic disease surveillance amongst animals is unclear. Further, compared to these comparator countries, Panama lacks established teams of experts and a stockpile of personal protective equipment (PPE).

Table 2. Emergency preparedness indicators

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Panama</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Existing legislation</td>
<td>Sanitary Code (6) and Law 31 regulating the “profession of technician in medical emergencies and other provisions” outline infectious disease and quarantine measures (7).</td>
<td>The <em>Infectious Disease Control and Prevention Act</em> and the <em>Quarantine Act</em> establishes mandatory disease notification and quarantine measures (8), as well as the <em>Fundamental Act</em> on National Crisis Management, which includes the Disaster Management Standards Manual, the Crisis Response Manual, and the Situation Action Manual (9).</td>
<td>Law No. 9,202 establishes the measures necessary to maintain collective health (10,11) and Decree No.41/012 establishes mandatory disease notification including outbreak events.</td>
</tr>
<tr>
<td>1.3</td>
<td>Existing One Health or zoonotic coordination</td>
<td>No — In the Ministry of Agricultural development there is a National Directorate of Animal Health (14), but it doesn’t coordinate actions with the Ministry of Health (15).</td>
<td>Korea Disease Control and Prevention Agency (KDCA): Division of Zoonotic and Vector Borne Disease Control (16).</td>
<td>National integrated preparedness plan for an influenza pandemic describes intersectoral integration between the Ministries of Public Health and Livestock at the central and departmental level (17).</td>
</tr>
<tr>
<td>1.4</td>
<td>Pandemic surveillance systems (human health)</td>
<td>Epidemiological Surveillance Department and sentinel surveillance through 10 hospitals, and 12 health centres, linked to 1 regional laboratory and 1 laboratory connected to the national influenza center (18).</td>
<td>Korea Influenza and Respiratory Virus Surveillance System (KINRESS); Clinical sentinel surveillance in 200 outpatient clinics; 52 laboratory sentinel surveillance sites; 207 hospitals conduct influenza hospitalization and mortality surveillance (19).</td>
<td>Health Surveillance Department (DEVISA); National Emergency System (SINAEN); National Integrated Health System (SNIS) (20); SARI surveillance at 6 sentinel centres; IT system for hospital infection surveillance and influenza-like-illness reporting (ETI program) (21); respiratory samples are analyzed by the Department of Public Health Laboratory.</td>
</tr>
<tr>
<td>1.5</td>
<td>Pandemic surveillance systems (animal health)</td>
<td>Research Department of Emerging and Zoonotic Diseases, however unclear the extent to which surveillance is undertaken (22).</td>
<td>National Institute of Health – Centre for Infectious Disease Research (Division of Bacterial Disease Research, or Division of Emerging Infectious Disease and Vector Research) and emergency coordination for zoonotic disease in coordination with the Ministry of Agriculture, Food, and Rural Affairs (23).</td>
<td>National Animal Health Emergency System (SINEASA) (24).</td>
</tr>
<tr>
<td>1.6</td>
<td>Teams of experts in SARI/influenza or emerging infectious diseases</td>
<td>No.</td>
<td>Yes – For emerging infectious diseases and for public health emergency preparedness response through the KDCA (16).</td>
<td>Emergency Operational Committee convened a commission of national technical experts for pandemic influenzas including clinicians, academics, virologists, and epidemiologists (17).</td>
</tr>
<tr>
<td>1.7</td>
<td>National PPE stockpile</td>
<td>No.</td>
<td>Yes – Following the 2015 MERS outbreak, changes were introduced to adopt a more dynamic stockpiling approach with a system for real time stockpiling management currently under implementation as well as a 5-year National Strategic Stockpile.</td>
<td>Yes – The Administration of the State Health Services (ASSE) and Ministry of Public Health purchased PPE, centralized stock, and ensured distribution to both the public and private sector (17).</td>
</tr>
</tbody>
</table>
1.2 COVID-19 Response Governance

The COVID-19 response in Panama has featured leadership from the highest levels of government. The central government has implemented most of the policies and measures related to the pandemic. Similar to Uruguay, a top medical official, the Director General of Health, has a leadership role in the response.

Table 3. COVID-19 response governance indicators

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Panama</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.8</td>
<td>President/Prime Minister leadership</td>
<td>Yes – The president has played a central role (25).</td>
<td>Yes – The president and prime minister have both played central roles.</td>
<td>Yes – The president has been a central figure in the response and has held regular press conferences to communicate the government’s approach (“Prevent, react, control”) (26–29).</td>
</tr>
<tr>
<td>1.9</td>
<td>Establishment of taskforce or government-wide committee</td>
<td>Yes – Presidential Advisory Health Committee comprised of the vice president, Minister of the Presidency, Minister of Health, Minister of Commerce and Industry, Minister of Security and Director of the Social Security Fund, dean of the Faculty of Medicine of the University of Panama, and other medical experts (30,31).</td>
<td>Yes – Using existing public health emergency response structures which activated high-level national response protocols to ensure a cross-society and pan-governmental approach including the prime minister, the Ministry of the Interior and Safety, Ministry of Health and Welfare, Government Office for Policy, and the National Security Council (23).</td>
<td>Yes – Departmental Coordination Centers of Emergencies (Cecoed) that form part of the Departmental Emergency Committee (CDE) (29); comprised of representatives of the Departmental Administration, the Ministry of Social Development, the Ministry of National Defense, the National Fire Department, the National Police, and the Ministry of Public Health (32).</td>
</tr>
<tr>
<td>1.10</td>
<td>Leadership from Chief Medical Officer of Health or another top scientific official</td>
<td>Yes (33).</td>
<td>Yes (34).</td>
<td>Yes – Director General of Health advises the Minister of Public Health and the council of ministers on COVID-19 matters (35,36).</td>
</tr>
<tr>
<td>1.11</td>
<td>Pandemic funding</td>
<td>Yes – In January 2020 the Ministry of Economy and Finance (MEF) authorized allocation of an initial budget of US $ 1 million to the Ministry of Health (MINSA) for all</td>
<td>Yes – 4 stages of fiscal measures beginning with immediate support for preventive and medical services, small merchants and small-to-medium enterprises, and financial</td>
<td>Yes – COVID solidarity fund (40).</td>
</tr>
<tr>
<td>1.12</td>
<td>Level of Government that decides policy</td>
<td>Central – Government established a crisis cabinet to design a containment strategy, and the Ministry of Health (MINSA) created an independent advisory group that makes recommendations and guidelines for the response. The Emergency Operations Center (COE) is the strategic instance for intersectoral coordination of actions aimed at containing the transmission of the virus and mitigating the effects. MINSA and the Association of Municipalities of Panama (AMUPA), signed an agreement that allows greater coordination with local authorities to promote actions in the fight against COVID-19 (41–43).</td>
<td>Mixed – Horizontal coordination at the strategic level facilitated through the Central Safety Management Committee chaired by the prime minister; Ministry of Interior and Safety Public Health Disaster Response Division coordinated closely with Ministry of Health and Welfare (23).</td>
<td>Central – The president of the republic is advised by an Honorary Scientific Advisory Group (GACH) (44), it is the responsibility of the Ministry of Public Health (MSP) (35,45) to lead the national response, carry out risk assessments, and define the need to convene other organizations for the multisectoral response.</td>
</tr>
<tr>
<td>1.13</td>
<td>Level of Government that implements policy</td>
<td>Central – MINSA leads and coordinates intersectoral response actions, evaluating outbreak progress and compliance of strategies and measures. In March 2020, MINSA published a practical guide aimed at local governments that defines the role of local authorities in terms of issuing mayoral regulations, disclosure, compliance verification, and sanctions (46).</td>
<td>Mixed – Central government along with provincial and local governments implement the infectious disease prevention and control policy, together with a network of 256 Public Health Centers and medical institutions (23,47).</td>
<td>Central (35,48).</td>
</tr>
</tbody>
</table>
2. Timely Implementation of Effective Interventions to Prevent the Spread of COVID-19

The comparative exercise revealed several strengths in the response to COVID-19 in Panama. For most of the indicators assessed, the level of stringency was higher in Panama than in Uruguay and South Korea. However, as depicted in the figures 2A and 2B, the timeliness of implementation lagged in Panama in 13 out of 16 interventions compared to Uruguay, and seven compared to South Korea.

- Panama introduced some of its strictest income relief measures (income support and debt relief) almost two months after the country reached 0.1 deaths per one million population, including cash transfers (*Panama Solidario*) for those who lost their jobs due the pandemic, prohibition of cancellation of utilities (electricity and internet) due to lack or delay of payment, and moratoriums for the payment of credit cards and loans (49,50). This was about two months later than similar programs were introduced in Uruguay.

- Panama implemented programs to support food security and housing expenses about two months after the country reached 0.1 deaths per one million population, including digital vouchers or food baskets (*Panama Solidario*) to individuals who lost their jobs due to the pandemic (51), and moratoriums on mortgage payments and on evictions for tenants with difficulties to pay rent (52). This was around two months later than Uruguay and South Korea.

- Panama introduced its most stringent measure to wear face masks nearly three months after the country reached 0.1 deaths per one million population, and two months later than similar measures were taken in Uruguay.

- Panama introduced programs to support access to personal protection equipment for the general population almost one month after the country reached 0.1 deaths per one million population, including the delivery of face masks to users of public transport and at the entrance of some districts (53,54). This was two months later than similar programs in South Korea.

- Panama introduced some of its strictest containment measures (school and workplace closing, cancellation of public events, stay-at-home, and restrictions on gatherings and internal movement) earlier than South Korea.

There were no policy gaps in terms of the stringency of measures introduced by Panama compared to Uruguay or South Korea.
<table>
<thead>
<tr>
<th>Indicator code</th>
<th>Indicator</th>
<th>LAC country</th>
<th>Comparators</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1</td>
<td>School closing</td>
<td>Panama</td>
<td>High</td>
</tr>
<tr>
<td>M2</td>
<td>Workplace closing</td>
<td>Panama</td>
<td>High</td>
</tr>
<tr>
<td>M3</td>
<td>Cancellation of public events</td>
<td>Panama</td>
<td>High</td>
</tr>
<tr>
<td>M4</td>
<td>Recommendations on gatherings</td>
<td>Panama</td>
<td>High</td>
</tr>
<tr>
<td>M5</td>
<td>Close public transport</td>
<td>Panama</td>
<td>High</td>
</tr>
<tr>
<td>M6</td>
<td>Stay at home</td>
<td>Panama</td>
<td>High</td>
</tr>
<tr>
<td>M7</td>
<td>Restrictions on internal movement</td>
<td>Panama</td>
<td>High</td>
</tr>
<tr>
<td>M8</td>
<td>International travel restrictions</td>
<td>Panama</td>
<td>High</td>
</tr>
<tr>
<td>M9</td>
<td>Public info campaigns</td>
<td>Panama</td>
<td>High</td>
</tr>
<tr>
<td>M10</td>
<td>Income support</td>
<td>Panama</td>
<td>Moderate</td>
</tr>
<tr>
<td>M11</td>
<td>Debt/contract relief for households</td>
<td>Panama</td>
<td>High</td>
</tr>
<tr>
<td>M12</td>
<td>Use of masks or face coverings</td>
<td>Panama</td>
<td>High</td>
</tr>
<tr>
<td>M13</td>
<td>Programs to support food security</td>
<td>Panama</td>
<td>High</td>
</tr>
<tr>
<td>M14</td>
<td>Programs to support housing expenses</td>
<td>Panama</td>
<td>High</td>
</tr>
<tr>
<td>M15</td>
<td>Programs to support self-isolation</td>
<td>Panama</td>
<td>High</td>
</tr>
</tbody>
</table>
| M16            | Programs to support access to PPE in the general population | Panama | High

**Table 4. Stringency levels in the strictest interventions in Panama compared to Uruguay and South Korea**

**Abbreviations:** PPE = personal protective equipment  
**Sources:** Panama: M1 (55), M2 (56), M3 (50), M4 (50), M5 (57), M6 (50), M7 (58), M8 (50,59,60), M9 (61), M10 (62–64), M11 (49,50), M12 (65), M13 (51), M14 (52,66), M15 (67–69), M16 (53,54). Uruguay: M1 (70), M2 (71), M3 (71), M5 (72), M6 (71), M7 (71), M8 (71,73,74), M9 (61), M10 (71), M11 (71), M12 (75), M13 (71), M14 (76,77), M15 (71), M16 (71). South Korea: M1 (78,79), M2 (80), M3 (81), M4 (82), M6 (83), M7 (83), M8 (84), M9 (61), M10 (85), M11 (86), M12 (87), M13 (88), M14 (89,90), M15 (91,92), M16 (93)
Figure 2A. Timeline of the introduction of measures in Panama compared to Uruguay

Indicator code: M1= School closing; M2= Workplace closing; M3= Cancellation of public events; M4= Recommendations on gatherings; M5= Close public transport; M6= Stay at home; M7= Restrictions on internal movement; M8= International travel restrictions; M9= Public info campaigns; M10= Income support; M11= Debt/contract relief for households; M12= Use of masks or face coverings; M13= Programs to support food security; M14= Programs to support housing expenses; M15= Programs to support self-isolation for people in need of; M16= Programs to support access to personal protection equipment in the general population.

Abbreviations: FC= First confirmed case of COVID-19; FD= First confirmed death of COVID-19

Stringency: High Moderate Low

Benchmark Dates: Date case benchmark reached (0.1 cases per 1 million inhabitants) Date death benchmark reached (0.1 deaths per 1 million inhabitants)

Sources: Panama: M1 (55), M2 (56), M3 (50), M4 (50), M5 (57), M6 (50), M7 (58), M8 (50,59,60), M9 (61), M10 (62–64), M11 (49,50), M12 (65), M13 (51), M14 (52,66), M15 (67–69), M16 (53,54). Uruguay: M1 (70), M2 (71), M3 (71), M5 (72), M6 (71), M7 (71), M8 (71,73,74), M9 (61), M10 (71), M11 (71), M12 (75), M13 (71), M14 (76,77), M15 (71), M16 (71).
**Figure 2B.** Timeline of the introduction of measures in Panama compared to South Korea

**Indicators code:** M1= School closing; M2= Workplace closing; M3= Cancellation of public events; M4= Recommendations on gatherings; M5= Close public transport; M 6= Stay at home; M7= Restrictions on internal movement; M 8= International travel restrictions; M9= Public info campaigns; M10= Income support; M11= Debt/contract relief for households; M12= Use of masks or face coverings; M13= Programs to support food security; M14= Programs to support housing expenses; M15= Programs to support self-isolation for people in need of; M16= Programs to support access to personal protection equipment in the general population;

**Stringency:** High | Moderate | Low

**Benchmark Dates:** Date case benchmark reached (0.1 cases per 1 million inhabitants) Date death benchmark reached (0.1 deaths per 1 million inhabitants)

**Sources:** **Panama:** M1 (55), M2 (56), M3 (50), M4 (50), M5 (57), M6 (50), M7 (58), M8 (50, 59, 60), M9 (61), M10 (62–64), M11 (49, 50), M12 (65), M13 (51), M14 (52, 66), M15 (67–69), M16 (53, 54). **South Korea:** M1 (78, 79), M2 (80), M3 (81), M4 (82), M6 (83), M7 (83), M8 (84), M9 (61), M10 (85), M11 (86), M12 (87), M13 (88), M14 (89, 90), M15 (91, 92), M16 (93)
3. Healthcare Sector Responses

3.1 Test

Whereas the comparator countries’ national policies involved open public testing, including for asymptomatic individuals, Panama offers testing only for those with COVID-19 symptoms. Panama reports 2.9 tests per confirmed case, representing a larger burden of COVID-19 in the community compared to South Korea and Uruguay. Compared to Uruguay, Panama has more institutions with lab capacity to process COVID-19 tests, and like South Korea, Panama uses technology to support screening and testing.

Table 5. Screening and testing measures

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Panama</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>National Testing Policy</td>
<td>Anyone with symptoms (94).</td>
<td>Open public testing (incl. asymptomatic) (94).</td>
<td>Open public testing (incl. asymptomatic) (94).</td>
</tr>
<tr>
<td>3.2</td>
<td>Tests per confirmed case</td>
<td>2.9 (94)</td>
<td>209.1 (94)</td>
<td>136.9 (95)</td>
</tr>
<tr>
<td>3.3</td>
<td>Institutions with lab capacity to process COVID-19 tests</td>
<td>24 (96)</td>
<td>96 (97)</td>
<td>13 (98)</td>
</tr>
<tr>
<td>3.4</td>
<td>Type of screening centres to administer COVID-19 tests</td>
<td>Hospital and community (99).</td>
<td>Hospital and community (100).</td>
<td>Hospital and community (101).</td>
</tr>
<tr>
<td>3.5</td>
<td>Description of screening and testing measures</td>
<td>COVID-19 tests are carried out in centers, hospitals and clinics; Protect Yourself Panama Plan, uses artificial intelligence to recommend when a patient should be tested; Dr. R.O.S.A. (Automatic Health Operational Response) is a WhatsApp bot that performs virtual screening and identifies individuals that should get tested. Additionally, mass testing is available through the National Network for COVID-19 Diagnosis (102).</td>
<td>Drive through testing facilities; expanded testing centres to alleviate pressure on hospitals and clinics (100).</td>
<td>Local test kit production (103); obligatory testing if admitted to health care facility (71); testing offered at home; random testing in areas with outbreaks.</td>
</tr>
</tbody>
</table>
3.2 Trace

Unlike comparator countries, Panama only traces some cases and created sanitary fences (*cercos sanitarios*), to prevent movement in and out of areas with confirmed cases.

**Table 6. Contact tracing policies**

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Panama</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.6</td>
<td>Contact tracing policy</td>
<td>Limited tracing (94).</td>
<td>All cases without exception (94).</td>
<td>All cases without exception (104).</td>
</tr>
<tr>
<td>3.7</td>
<td>Contact tracing strategy</td>
<td>Case identification and contact tracing.</td>
<td>Case identification, contact tracing, and mandatory quarantine for identified confirmed and suspected cases (94).</td>
<td>Case identification and self-directed isolation plus contact tracing (104).</td>
</tr>
<tr>
<td>3.8</td>
<td>Other policies or mechanisms</td>
<td>Rapid Response Teams (ERR) (105) conduct home visits and workplace inspections. Unified Traceability Teams (EUT) were set up but discoordination has been reported (106); Sanitary Fences (<em>cercos sanitarios</em>) are created in areas with high cases to conduct registry of positive cases in the identification system using the National Police card to prevent the mobilization of positive cases (107). There are also Centers for Community Control and Traceability (108).</td>
<td>Opened 600 screening centres (109); Epidemic Intelligence Surveillance officers permitted to draw on data sources including facility visits, credit card transaction logs, cellular GPS data, and CCTV; patient trajectories were made public (100,110).</td>
<td>App to alert individuals when they were in close proximity to a person with COVID-19 (111); telehealth and a centralized database for epidemiological reporting (71); synchronized case management and follow-up (112).</td>
</tr>
</tbody>
</table>
3.3 Treat

Compared to comparator countries, Panama had fewer intensive care units (ICU) beds and ventilators before COVID, but similar to Uruguay has increased the number of available beds.

Table 7. Health system capacity and adaptations

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Panama</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.9</td>
<td>Daily outpatient visits: Jan 2020 to July 2020</td>
<td>Undetermined</td>
<td>Undetermined</td>
<td>Undetermined</td>
</tr>
<tr>
<td>3.10</td>
<td>Existing (pre-COVID) ICU capacity</td>
<td>8.1 per 100,000</td>
<td>10.6 per 100,000</td>
<td>19.9 per 100,000</td>
</tr>
<tr>
<td></td>
<td>population (113)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.11</td>
<td>ICU capacity August 2020</td>
<td>10.96 per 100,000</td>
<td>Undetermined</td>
<td>23 per 100,000</td>
</tr>
<tr>
<td></td>
<td>population (115)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.12</td>
<td>ICU occupation rate August 2020</td>
<td>70% (116)</td>
<td>Undetermined</td>
<td>52.4% (98)</td>
</tr>
<tr>
<td>3.13</td>
<td>Existing (pre-COVID) ventilator capacity</td>
<td>11.18 per 100,000</td>
<td>19.11 per 100,000</td>
<td>18.8 per 100,000</td>
</tr>
<tr>
<td></td>
<td>population (117)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.14</td>
<td>Ventilator capacity August 2020</td>
<td>12 per 100,000</td>
<td>Undetermined</td>
<td>Undetermined</td>
</tr>
<tr>
<td>3.15</td>
<td>COVID-19 ICU &amp; ventilator adaptations</td>
<td>Funds allocated to strengthen the health system for epidemiological monitoring and care of COVID patients (118).</td>
<td>Using portable negative pressure devices, the government was able to rapidly expand the supply of temporary airborne infection isolation rooms. In Daegu, officials created about 400 additional negative pressure beds during the crisis (110).</td>
<td>In March the government expanded the number of beds in ICU and increased the amount of specialized equipment and respirators in healthcare facilities nationally (119,120).</td>
</tr>
</tbody>
</table>

Much like comparator countries, to increase the health workforce Panama has arranged for additional health workforce training. The status of personal protective equipment (PPE) in Panama is reportedly adequate. As with comparator countries, Panama has looked to domestic production, in addition to international procurement, to secure PPE supplies.
Table 8. Health care workforce, adaptations and supplies

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Panama</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.16</td>
<td>Existing (pre-COVID) doctors</td>
<td>1.6 per 1,000 population (113)</td>
<td>2.4 per 1,000 population (121)</td>
<td>5.1 per 1,000 population (113)</td>
</tr>
<tr>
<td>3.17</td>
<td>Existing (pre-COVID) nurses</td>
<td>3.1 per 1,000 population (113)</td>
<td>7.2 per 1,000 population (121)</td>
<td>1.9 per 1,000 population (113)</td>
</tr>
<tr>
<td>3.18</td>
<td>COVID-19 health workforce adaptations</td>
<td>Extra training provided to doctors and nurses to provide home visits for COVID-19-positive patients (122).</td>
<td>Additional workers trained in contact tracing. Additional healthcare workers hired or volunteered to aid in the crisis in some cities (110).</td>
<td>Re-training of staff to provide ICU care; expedition of registration of healthcare workers with the Ministry of Health; expedition of registration for medical trainees; program to allow public officials to perform as volunteers in different actions coordinated by the Ministry of Public Health (45,71).</td>
</tr>
<tr>
<td>3.19</td>
<td>PPE for healthcare workers</td>
<td>PPE Availability: No official shortage reported (123). Adaptations: None. Domestic Production: The National Brewery is able to produce 3 million masks per month for internal use (local and regional level) and also donates masks to institutions and social organizations in Panama (15). Purchasing/Procurement: Government procured masks and there has been donation of PPE from organizations and other countries (124,125).</td>
<td>PPE Availability: Early shortages limited by penalizing export and hoarding of PPE. Adaptations: None Domestic Production: Doubled domestic production of PPE goods. Purchasing/Procurement: Government purchased 80% of the mask supply from Korean manufacturers early in the pandemic to secure mask supply (110).</td>
<td>PPE Availability: Initial shortage of medical supplies (Feb 2020) (126). Adaptations: Guidance on extended use and reprocessing of N95 respirators by healthcare staff (72). Domestic production: Coordinated manufacturing of masks by the Ministry of Defence (75). Purchasing/Procurement: Central government coordinated purchasing of PPE and medical supplies (127).</td>
</tr>
</tbody>
</table>
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14. Direct information to Panama World Bank partner.


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Cuidarse de la covid


123. UNICEF aumenta la entrega de suministros de salud en América Latina y el Caribe [Internet]. [cited 2020 Oct 8]. Available from: https://www.unicef.org/panama/historias/unicef-aumenta-la-entrega-de-suministros-de-salud-en-am%23C3%A9rica-latina-y-el-caribe


PARAGUAY

Country Background

Paraguay registered its first confirmed case of COVID-19 on March 7, 2020, - a citizen who had recently traveled Ecuador (1). With the increasing number of new cases and lack of compliance with the preventive public policies decreed by the national government, the president of Paraguay declared a national state of emergency, on March 16, 2020, to reduce community transmission of the virus (2). The state of emergency introduced several containment measures (2). For example, Paraguay has introduced “hygiene points”, sinks placed at the entrance of buildings, shops, markets, and other public spaces as part of a national handwashing campaign (3–5).

On April 27, the president of Paraguay announced a four-phase plan (Cuarentena inteligente) for the gradual reopening of the economy (6,7). The Ministry of Health assesses progress during the four phases and advises on movement between phases (8). Table 1 shows the total number of confirmed cases and deaths per 100,000 inhabitants in Paraguay compared to Uruguay and South Korea, as of November 1, 2020. Figure 1 shows the average of daily new cases and deaths in Paraguay by epidemiological week, as of November 1, 2020.

Table 1. Total number of confirmed cases and deaths per 100,000 inhabitants in Paraguay compared to Uruguay and South Korea, as of November 1, 2020

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Paraguay</th>
<th>Uruguay</th>
<th>South Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of confirmed cases per 100,000</td>
<td>886</td>
<td>90</td>
<td>52</td>
</tr>
<tr>
<td>Total number of confirmed deaths per 100,000</td>
<td>19.7</td>
<td>1.7</td>
<td>0.91</td>
</tr>
</tbody>
</table>

Source: Our World in Data (9)

Figure 1. Average of daily new cases and deaths in Paraguay by epidemiological week, as of November 1, 2020.

Source: Data from Our World in Data, Coronavirus Pandemic (COVID-19) (9). Note: We considered December 29, 2019, to January 4, 2020, as the first epidemiological week and we only considered confirmed deaths due to COVID-19 (10).
1. Emergency Preparedness and Response Governance

1.1 Emergency Preparedness

Paraguay has comparable emergency preparedness to both Uruguay and South Korea, particularly in regard to pandemic response legislation, severe acute respiratory infection (SARI)/influenza pandemic preparedness plans and surveillance systems to monitor both human and animal health. However, unlike these comparator countries, Paraguay did not have a stockpile of personal protective equipment (PPE).

Table 2. Emergency preparedness indicators

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Paraguay</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Existing legislation</td>
<td>The Sanitary Code, Chapter 3 establishes mandatory disease notification and quarantine measures and outlines that the Ministry of Health has the responsibility to reduce or eliminate infectious disease risks (11).</td>
<td>The Infectious Disease Control and Prevention Act and the Quarantine Act establishes mandatory disease notification and quarantine measures, (12), as well as the Fundamental Act on National Crisis Management, which includes the Disaster Management Standards Manual, the Crisis Response Manual, and the Situation Action Manual (13).</td>
<td>Law No. 9,202 establishes the measures necessary to maintain collective health (14,15) and Decree No.41/012 establishes mandatory disease notification including outbreak events.</td>
</tr>
<tr>
<td>1.3</td>
<td>Existing One Health or zoonotic coordination</td>
<td>The National Service for Animal Quality and Health (SENACSA) and National Zoonosis Control Program (18).</td>
<td>Korea Disease Control and Prevention Agency (KDCA): Division of Zoonotic and Vector Borne Disease Control (19).</td>
<td>National integrated preparedness plan for an influenza pandemic describes intersectoral integration between the Ministries of Public Health and Livestock at the central and departmental level (20).</td>
</tr>
<tr>
<td>1.4</td>
<td>Pandemic surveillance systems (human health)</td>
<td>National Epidemiological Surveillance System; Sentinel surveillance in 7 hospitals and 5 influenza-like-illness monitoring centres across the</td>
<td>Korea Influenza and Respiratory Virus Surveillance System (KINRESS); Clinical sentinel surveillance in 200 outpatient clinics; 52 laboratory sentinel</td>
<td>Health Surveillance Department (DEVISA); National Emergency System (SINAES); National Integrated Health System (SNIS) (23); SARI surveillance at 6</td>
</tr>
<tr>
<td>1.5</td>
<td>Pandemic surveillance systems (animal health)</td>
<td>The National Service for Animal Quality and Health (SENACSA) provides epidemiological surveillance (both active and passive) (18).</td>
<td>National Institute of Health - Centre for Infectious Disease Research (Division of Bacterial Disease Research, or Division of Emerging Infectious Disease and Vector Research) and emergency coordination for zoonotic disease in coordination with the Ministry of Agriculture, Food, and Rural Affairs (25).</td>
<td>National Animal Health Emergency System (SINEASA) (26).</td>
</tr>
<tr>
<td>1.6</td>
<td>Teams of experts in SARI/influenza or emerging infectious diseases</td>
<td>Yes – Associated with the National Epidemiological Surveillance System (27).</td>
<td>Yes – For emerging infectious diseases and for public health emergency preparedness response through the KDCA (19).</td>
<td>Emergency Operational Committee convened a commission of national technical experts for pandemic influenzas including clinicians, academics, virologists, and epidemiologists (20).</td>
</tr>
<tr>
<td>1.7</td>
<td>National PPE stockpile</td>
<td>No.</td>
<td>Yes – Following the 2015 MERS outbreak, changes were introduced to adopt a more dynamic stockpiling approach with a system for real time stockpiling management currently under implementation as well as a 5-year National Strategic Stockpile.</td>
<td>Yes – The Administration of the State Health Services (ASSE) and Ministry of Public Health purchased PPE, centralized stock, and ensured distribution to both the public and private sector (20).</td>
</tr>
</tbody>
</table>
1.2 COVID-19 Response Governance

The COVID-19 response in Paraguay has featured leadership from the highest levels of government and included a government-wide taskforce for the COVID-19 response. Much like Uruguay, the response in Paraguay has included scientific leadership from the Director of Health Surveillance with policies decided and implemented through the central government.

Table 3. COVID-19 response governance indicators

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Paraguay</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.8</td>
<td>President/Prime Minister leadership</td>
<td>Yes – The president has played a central role (28).</td>
<td>Yes – The president and prime minister have both played central roles.</td>
<td>Yes – The president has been a central figure in the response and has held regular press conferences to communicate the government's approach (&quot;Prevent, react, control&quot;) (29–32).</td>
</tr>
<tr>
<td>1.9</td>
<td>Establishment of taskforce or government-wide committee</td>
<td>Yes – Resolution No. 76 established Emergency Operations Center (EOC) to respond to the COVID-19 outbreak. This EOC was empowered to request support from other dependencies within the Central Administration for the implementation of the National Plan to Respond to the Outbreak (33).</td>
<td>Yes – Using existing public health emergency response structures, which activated high-level national response protocols to ensure a cross-society and pan-governmental approach including the prime minister, the Ministry of the Interior and Safety, Ministry of Health and Welfare, Government Office for Policy and the National Security Council (25).</td>
<td>Yes – Departmental Coordination Centers of Emergencies (Cecoed) that form part of the Departmental Emergency Committee (CDE) (32); comprised of representatives of the Departmental Administration, the Ministry of Social Development, the Ministry of National Defense, the National Fire Department, the National Police, and the Ministry of Public Health (34).</td>
</tr>
<tr>
<td>1.10</td>
<td>Leadership from Chief Medical Officer of Health or another top scientific official</td>
<td>Yes – Director of Health Surveillance (35).</td>
<td>Yes (36).</td>
<td>Yes - Director General of Health advises the Minister of Public Health and the council of ministers on COVID-19 matters (37,38).</td>
</tr>
<tr>
<td>1.11</td>
<td>Pandemic funding</td>
<td>Yes – The national government invested in medical supplies and equipment (39).</td>
<td>Yes – 4 stages of fiscal measures beginning with immediate support for preventive and medical services, small merchants and small-to-medium enterprises, and financial support for individuals quarantined/self-quarantined (40,41).</td>
<td>Yes – COVID solidarity fund (42).</td>
</tr>
<tr>
<td>1.12</td>
<td>Level of Government that decides policy</td>
<td>Central – Political interventions in response to COVID-19 are carried out by the central government (43).</td>
<td>Mixed – Horizontal coordination at the strategic level facilitated through the Central Safety Management Committee chaired by the prime minister; Ministry of Interior and Safety Public Health Disaster Response Division coordinated closely with Ministry of Health and Welfare (25).</td>
<td>Central – The president of the republic is advised by an Honorary Scientific Advisory Group (GACH) (44); It is the responsibility of the Ministry of Public Health (MSP) (37,45) to lead the national response, carry out risk assessments, and define the need to convene other organizations for the multisectoral response.</td>
</tr>
<tr>
<td>1.13</td>
<td>Level of Government that implements policy</td>
<td>Central – The response is implemented by the Executive Branch through the Ministry of Public Health and Social Welfare (43).</td>
<td>Mixed – Central government along with provincial and local governments implement the infectious disease prevention and control policy, together with a network of 256 Public Health Centers and medical institutions (25,46).</td>
<td>Central (37,47).</td>
</tr>
</tbody>
</table>
2. Timely Implementation of Effective Interventions to Prevent the Spread of COVID-19

The comparative exercise revealed several strengths in the Paraguayan response to COVID-19. For most of the indicators assessed, the level of stringency was as high in Paraguay as in both Uruguay and South Korea. However, as depicted in Figures 2A and 2B, the timeliness of implementation lagged in Paraguay in 13 out of 16 interventions compared to Uruguay, and three compared to South Korea.

- Paraguay introduced its strictest measures to wear face masks nearly two months after the country reached 0.1 cases per one million population. This was about two months later than Uruguay but four months earlier than South Korea. Although, wearing face masks in South Korea is highly accepted by the public and it was not enforced in all the public spaces during the early stages of the epidemic (48).
- Paraguay introduced some of its strict income relief measures (income, debt relief, and housing expenses support) nearly one month after the country reached 0.1 cases per one million population, including cash transfer programs, a subsidy of 25% of the current legal minimum wage to workers dependent on micro, small and medium enterprises, a subsidy of up to 100% of electricity, deferral of payment of other utilities (49,50), and delivery of food baskets (51). This was nearly one month later than similar measures introduced in Uruguay.
- Paraguay implemented programs to support housing expenses about one month after the country reached 0.1 cases per one million population, including moratoriums on evictions due to non-payment of rent if 40% of the rental value is justified. This was nearly one month later than Uruguay.
- Paraguay introduced its strictest stay at home measures one month after the country reached 0.1 cases per one million population (two weeks later than Uruguay).
- Paraguay introduced its strict containment measures (school and workplace closing, cancellation of public events, restrictions on gatherings, stay at home, and restrictions on internal movement) earlier than South Korea.

The following measures taken in South Korea and Uruguay to support the use of PPE could be considered in strengthening the COVID-19 response in Paraguay.

- South Korea and Uruguay introduced programs to support the use of PPE in the general population. To maintain supply prices, Uruguay published a weekly list of the minimum, maximum and average price of basic hygiene products, monitors the stock of hygiene supplies, and established agreements with merchants, producers, and intermediaries to maintain supplies prices (51). South Korea implemented measures to stabilize the supply of face masks and sanitizers including penalties to sellers with excessive sales increases of these products (52) and a system that allowed residents to acquire a maximum of two masks per person per week on designated days (53).
Table 4. Stringency levels in the strictest interventions in Paraguay and the comparators

<table>
<thead>
<tr>
<th>Indicator code</th>
<th>Indicator</th>
<th>LAC country</th>
<th></th>
<th>Comparators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Paraguay</td>
<td>Uruguay</td>
<td>South Korea</td>
</tr>
<tr>
<td>M1</td>
<td>School closing</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M2</td>
<td>Workplace closing</td>
<td>High</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>M3</td>
<td>Cancellation of public events</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M4</td>
<td>Recommendations on gatherings</td>
<td>High</td>
<td>No measures</td>
<td>High</td>
</tr>
<tr>
<td>M5</td>
<td>Close public transport</td>
<td>High</td>
<td>Moderate</td>
<td>No measures</td>
</tr>
<tr>
<td>M6</td>
<td>Stay at home</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Low</td>
</tr>
<tr>
<td>M7</td>
<td>Restrictions on internal movement</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M8</td>
<td>International travel restrictions</td>
<td>High</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>M9</td>
<td>Public info campaigns</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M10</td>
<td>Income support</td>
<td>Moderate</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>M11</td>
<td>Debt/contract relief for households</td>
<td>High</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>M12</td>
<td>Use of masks or face coverings</td>
<td>High</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>M13</td>
<td>Programs to support food security</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M14</td>
<td>Programs to support housing expenses</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M15</td>
<td>Programs to support self-isolation</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M16</td>
<td>Programs to support access to PPE in the general population</td>
<td>No measures</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>

Abbreviations: PPE = personal protective equipment

Sources: Paraguay: M1 (54,55), M2 (56–58,58), M3 (57), M4 (56), M5 (59), M6 (2,60,61), M7 (62,63), M8 (54), M9 (64), M10 (65–67), M11 (49,50), M12 (68,69), M13 (54,70,71), M14 (72), M15 (73,74). Uruguay: M1 (75), M2 (51), M3 (51), M5 (76), M6 (51), M7 (51), M8 (51,77,78), M9 (64), M10 (51), M11 (51), M12 (79), M13 (51), M14 (80,81), M15 (51), M16 (51). South Korea: M1 (82,83), M2 (84), M3 (85), M4 (86), M6 (87), M7 (87), M8 (88), M9 (64), M10 (89), M11 (90), M12 (91), M13 (92), M14 (41,93), M15 (94,95), M16 (52)
Figure 2A. Timeline of the introduction of measures in Paraguay compared to Uruguay
Figure 2B. Timeline of the introduction of measures in Paraguay compared to South Korea

**Indicators code:** M1= School closing; M2= Workplace closing; M3= Cancellation of public events; M4= Recommendations on gatherings; M5= Close public transport; M6= Stay at home; M7= Restrictions on internal movement; M8= International travel restrictions; M9= Public info campaigns; M10= Income support; M11= Debt/contract relief for households; M12= Use of masks or face coverings; M13= Programs to support food security; M14= Programs to support housing expenses; M15= Programs to support self-isolation for people in need of; M16= Programs to support access to personal protection equipment in the general population; F1= First confirmed case of COVID-19; F2= First confirmed death of COVID-19

**Stringency:** High Moderate Low

**Benchmark Dates:** Date case benchmark reached (0.1 cases per 1 million inhabitants) Date death benchmark reached (0.1 deaths per 1 million inhabitants)

**Sources:** Paraguay: M1 (54,55), M2 (56–58,58), M3 (57), M4 (56), M5 (59), M6 (2,60,61), M7 (62,63), M8 (54), M9 (64), M10 (65–67), M11 (49,50), M12 (68,69), M13 (54,70,71), M14 (72), M15 (73,74). South Korea: M1 (82,83), M2 (84), M3 (85), M4 (86), M6 (87), M7 (87), M8 (88), M9 (64), M10 (89), M11 (90), M12 (91), M13 (92), M14 (41,93), M15 (94,95), M16 (52)
3. Healthcare Sector Responses

3.1 Test

Whereas the comparator countries’ national policies involved open public testing, including for asymptomatic individuals, Paraguay offers testing only for those with COVID-19 symptoms and those who meet specific exposure criteria. However, in areas with a high number of cases the government has embarked on random testing of asymptomatic individuals. Paraguay reports 7.5 tests per confirmed case, representing a larger burden of COVID-19 in the community compared to South Korea and Uruguay (96). Paraguay has institutions with lab capacity to process COVID-19 tests comparable to Uruguay. Like South Korea, Paraguay offers drive through testing sites. Paraguay has also placed returning residents in temporary quarantine shelters.

Table 5. Screening and testing measures

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Paraguay</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>National Testing Policy</td>
<td>Those with symptoms AND meet criteria (e.g. case contacts, healthcare workers, admitted to hospital, travel history) (96).</td>
<td>Open public testing (incl. asymptomatic) (96).</td>
<td>Open public testing (incl. asymptomatic) (96).</td>
</tr>
<tr>
<td>3.2</td>
<td>Tests per confirmed case</td>
<td>7.5 (96)</td>
<td>209.1 (96)</td>
<td>136.9 (97)</td>
</tr>
<tr>
<td>3.3</td>
<td>Institutions with lab capacity to process COVID-19 tests</td>
<td>17 (98)</td>
<td>96 (99)</td>
<td>13 (100)</td>
</tr>
<tr>
<td>3.4</td>
<td>Type of screening centres to administer COVID-19 tests</td>
<td>Hospital and community (101,102).</td>
<td>Hospital and community (103).</td>
<td>Hospital and community (104).</td>
</tr>
<tr>
<td>3.5</td>
<td>Description of screening and testing measures</td>
<td>People first call the 154 (101) hotline to book a test and then access a testing centre, these include hospitals, and 2 motorway testing sites (105); Building of a new laboratory (106); housing those returning from abroad in shelters &quot;albergues&quot; (107); also random testing of asymptomatic individuals in the community (108).</td>
<td>Drive through testing facilities; expanded testing centres to alleviate pressure on hospitals and clinics (103).</td>
<td>Local test kit production (109); obligatory testing if admitted to health care facility (51); testing offered at home; random testing in areas with outbreaks.</td>
</tr>
</tbody>
</table>
3.2 Trace

Paraguay has a similar contact tracing policy and strategy to South Korea and Uruguay. Unlike comparator countries, Paraguay considers close contacts to positive cases as also positive.

Table 6. Contact tracing policies

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Paraguay</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.6</td>
<td>Contact tracing policy</td>
<td>All cases without exception (96).</td>
<td>All cases without exception (96).</td>
<td>All cases without exception (110).</td>
</tr>
<tr>
<td>3.7</td>
<td>Contact tracing strategy</td>
<td>Case identification and isolation plus contact tracing (96).</td>
<td>Case identification, contact tracing, and mandatory quarantine for identified confirmed and suspected cases (111).</td>
<td>Case identification and self-directed isolation plus contact tracing (110).</td>
</tr>
<tr>
<td>3.8</td>
<td>Other policies or mechanisms</td>
<td>Close contacts will not be tested but will be considered positive cases (35).</td>
<td>Opened 600 screening centres (112); Epidemic Intelligence Surveillance officers permitted to draw on data sources including facility visits, credit card transaction logs, cellular GPS data, and CCTV; patient trajectories were made public (103,111).</td>
<td>App to alert individuals when they were in close proximity to a person with COVID-19 (113); telehealth and a centralized database for epidemiological reporting (51); synchronized case management and follow-up (114).</td>
</tr>
</tbody>
</table>

3.3 Treat

Between January 2020 and July 2020, there has been a decrease in daily outpatient visits. However, there may be confounding effects influencing these numbers. Compared to comparator countries, Paraguay had fewer intensive care units (ICU) beds before COVID, but similar to Uruguay has increased the number of available beds.

Table 7. Health system capacity and adaptations

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Paraguay</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.9</td>
<td>Daily outpatient visits: Jan 2020 to July 2020</td>
<td>01/20: 851,697 visits; 07/20: 383,497 visits (54.97% decrease) (115)</td>
<td>Undetermined</td>
<td>Undetermined</td>
</tr>
<tr>
<td>3.10</td>
<td>Existing (pre-COVID) ICU capacity</td>
<td>2.3 per 100,000 population (116)</td>
<td>10.6 per 100,000 population (117)</td>
<td>19.9 per 100,000 population (118)</td>
</tr>
<tr>
<td>3.11</td>
<td>ICU capacity August 2020</td>
<td>6.2 per 100,000 population (116)</td>
<td>Undetermined</td>
<td>23 per 100,000 (116)</td>
</tr>
<tr>
<td>3.12</td>
<td>ICU occupation rate August 2020</td>
<td>75.3% (116)</td>
<td>Undetermined</td>
<td>52.4% (116)</td>
</tr>
</tbody>
</table>
To increase the health workforce, Paraguay has hired and retrained healthcare workers to provide ICU care for COVID-19. Similar to comparator countries, Paraguay experienced PPE shortages, and like Uruguay guidance was provided on the extended use and reprocessing of PPE by healthcare workers. To increase PPE supply, Paraguay has looked to domestic production and donation of PPE.

**Table 8. Health care workforce, adaptations and supplies**

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Paraguay</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.16</td>
<td>Existing (pre-COVID) doctors</td>
<td>1.4 per 1,000 population (126)</td>
<td>2.4 per 1,000 population (127)</td>
<td>5.1 per 1,000 population (118)</td>
</tr>
<tr>
<td>3.17</td>
<td>Existing (pre-COVID) nurses</td>
<td>1.7 per 1,000 population (126)</td>
<td>7.2 per 1,000 population (128)</td>
<td>1.9 per 1,000 population (118)</td>
</tr>
<tr>
<td>3.18</td>
<td>COVID-19 health workforce adaptations</td>
<td>Hiring of additional healthcare workers; Retraining of doctors, nurses and other healthcare workers to provide specialist care for COVID 19 (129).</td>
<td>Additional workers trained in contact tracing. Additional healthcare workers hired and volunteers secured to aid in the crisis in some cities (111).</td>
<td>Re-training of staff to provide ICU care; expedition of registration of healthcare workers with the Ministry of Health; expedition of registration for medical trainees; program to allow public officials to perform as volunteers in different actions coordinated by the Ministry of Public Health (45,51).</td>
</tr>
<tr>
<td>3.19</td>
<td>PPE for healthcare workers</td>
<td></td>
<td></td>
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</tr>
<tr>
<td><strong>PPE Availability:</strong></td>
<td>Ongoing shortages (130).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Adaptations:</strong></td>
<td>Guidelines on reuse and reprocessing of masks (131).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Domestic production:</strong></td>
<td>Domestic production of face shields (132).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Purchasing/Procurement:</strong></td>
<td>Donation of masks from companies and other countries (133,134).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PPE Availability:</strong></td>
<td>Early shortages limited by penalizing export and hoarding of PPE.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Adaptations:</strong></td>
<td>None</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Domestic Production:</strong></td>
<td>Doubled domestic production of PPE goods.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Purchasing/Procurement:</strong></td>
<td>Government purchased 80% of the mask supply from Korean manufacturers early in the pandemic to secure mask supply (111).</td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>PPE Availability:</strong></td>
<td>Initial shortage of medical supplies (Feb 2020) (135).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Adaptations:</strong></td>
<td>Guidance on extended use and reprocessing of N95 respirators by healthcare staff (136).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Domestic production:</strong></td>
<td>Coordinated manufacturing of masks by the Ministry of Defence (137).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Purchasing/Procurement:</strong></td>
<td>Central government coordinated purchasing of PPE and medical supplies (138).</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
References (Paraguay)


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TRINIDAD AND TOBAGO

Country Background

On January 31, 2020, the government of Trinidad and Tobago declared COVID-19 as a dangerous infectious disease (1,2). This intervention allowed the supply of resources for the management and surveillance of COVID-19 in the country (1). Trinidad and Tobago registered its first confirmed case of COVID-19 on March 12, 2020 (3) – a citizen who had recently traveled to Switzerland (4). The country activated the Pandemic COVID Plan and the Health Emergency Operation Centre and inter-ministerial task force. (5). The country has adopted a wide range of measures to face the pandemic. On May 9, the country announced a three-phase plan for the gradual reopening of the economy (6).

Table 1 shows the total number of confirmed cases and deaths per 100,000 inhabitants in Trinidad and Tobago compared to Uruguay and South Korea, as of November 1, 2020. Figure 1 shows the average of daily new cases and deaths in Trinidad and Tobago by epidemiological week, as of November 1, 2020.

Table 1. Total number of confirmed cases and deaths per 100,000 inhabitants in Trinidad and Tobago compared to Uruguay and South Korea, as of November 1, 2020

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Trinidad and Tobago</th>
<th>Uruguay</th>
<th>South Korea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of confirmed cases per 100,000</td>
<td>405</td>
<td>90</td>
<td>52</td>
</tr>
<tr>
<td>Total number of confirmed deaths per 100,000</td>
<td>7.6</td>
<td>1.7</td>
<td>0.91</td>
</tr>
</tbody>
</table>

Source: Our World in Data (7)

Figure 1. Average of daily new cases and deaths in Trinidad and Tobago by epidemiological week, as of November 1, 2020.

Source: Data from Our World in Data, Coronavirus Pandemic (COVID-19) (7). Note: We considered December 29, 2019, to January 4, 2020, as the first epidemiological week and we only considered confirmed deaths due to COVID-19 (8).
1. Emergency Preparedness and Response Governance

1.1 Emergency Preparedness

Trinidad and Tobago has comparable emergency preparedness to both Uruguay and South Korea, particularly for pandemic response legislation, severe acute respiratory infection (SARI)/influenza pandemic preparedness plans and surveillance systems to monitor both human and animal health. However, unlike these comparator countries, Trinidad and Tobago did not have a stockpile of personal protective equipment (PPE).

Table 2. Emergency preparedness indicators

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Trinidad &amp; Tobago</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Existing legislation</td>
<td>Public Health Ordinance Chapter 12:04 Section 103 provides that the president may, by proclamation, declare any disease to be an infectious disease. Section 105 provides that the Minister of Health shall have the direction of all measures dealing with dangerous infectious disease and may make regulations with regard to the control of any dangerous infectious disease (9).</td>
<td>The Infectious Disease Control and Prevention Act and the Quarantine Act establishes mandatory disease notification and quarantine measures, (10), as well as the Fundamental Act on National Crisis Management, which includes the Disaster Management Standards Manual, the Crisis Response Manual, and the Situation Action Manual (11).</td>
<td>Law No. 9,202 establishes the measures necessary to maintain collective health (12,13) and Decree No.41/012 establishes mandatory disease notification including outbreak events.</td>
</tr>
<tr>
<td>1.3</td>
<td>Existing One Health or zoonotic coordination</td>
<td>Veterinary public health unit, (15); Ministry of Health and Animal Health Division, Ministry of Agriculture, Land and Fisheries (16).</td>
<td>Korea Disease Control and Prevention Agency (KDCA) Division of Zoonotic and Vector Borne Disease Control (17).</td>
<td>National integrated preparedness plan for an influenza pandemic describes intersectoral integration between the Ministries of Public Health and Livestock at the central and departmental level (18).</td>
</tr>
<tr>
<td>1.4</td>
<td>Pandemic surveillance</td>
<td>Trinidad Public Health Laboratory and the National Surveillance Unit (19).</td>
<td>Korea Influenza and Respiratory Virus Surveillance System (KINRESS); Clinical</td>
<td>Health Surveillance Department (DEVISA); National Emergency System</td>
</tr>
<tr>
<td>1.5 Pandemic surveillance systems (animal health)</td>
<td>Veterinary public health unit, (15). Animal Health Division, Ministry of Agriculture, Land and Fisheries (16).</td>
<td>National Institute of Health - Centre for Infectious Disease Research (Division of Bacterial Disease Research, or Division of Emerging Infectious Disease and Vector Research) and emergency coordination for zoonotic disease in coordination with the Ministry of Agriculture, Food, and Rural Affairs (23).</td>
<td>National Animal Health Emergency System (SINEASA) (24).</td>
<td></td>
</tr>
<tr>
<td>---</td>
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<td></td>
</tr>
<tr>
<td>1.6 Teams of experts in SARI/influenza or emerging infectious diseases</td>
<td>Pandemic influenza committee (9).</td>
<td>Yes – For emerging infectious diseases and for public health emergency preparedness response through the KDCA (17).</td>
<td>Emergency Operational Committee convened a commission of national technical experts for pandemic influenza including clinicians, academics, virologists, and epidemiologists (18).</td>
<td></td>
</tr>
<tr>
<td>1.7 National PPE stockpile</td>
<td>No.</td>
<td>Yes – Following the 2015 MERS outbreak, changes were introduced to adopt a more dynamic stockpiling approach with a system for real time stockpiling management currently under implementation as well as a 5-year National Strategic Stockpile.</td>
<td>Yes – The Administration of the State Health Services (ASSE) and Ministry of Public Health purchased PPE, centralized stock, and ensured distribution to both the public and private sector (18).</td>
<td></td>
</tr>
</tbody>
</table>
1.2 COVID-19 Response Governance

The COVID-19 response in Trinidad and Tobago, like South Korea and Uruguay, has featured leadership from the highest levels of government. The central government has implemented most of the policies and measures related to the pandemic. Similar to Uruguay, the Chief Medical Officer of Health is directly involved in COVID-19 leadership.

Table 3. COVID-19 response governance indicators

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Trinidad &amp; Tobago</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.8</td>
<td>President/Prime Minister leadership</td>
<td>Yes – The prime minister has played a central role (5).</td>
<td>Yes – The president and prime minister have both played central roles.</td>
<td>Yes – The president has been a central figure in the response and has held regular press conferences to communicate the government's approach (&quot;Prevent, react, control&quot;) (25–28).</td>
</tr>
<tr>
<td>1.9</td>
<td>Establishment of taskforce or government-wide committee</td>
<td>Yes – Cabinet-approved inter-ministerial task force (5).</td>
<td>Yes – Using existing public health emergency response structures which activated high-level national response protocols to ensure a cross-society and pan-governmental approach including the prime minister, the Ministry of the Interior and Safety, Ministry of Health and Welfare, Government Office for Policy, and the National Security Council (23).</td>
<td>Yes – Departmental Coordination Centers of Emergencies (Cecoed) that form part of the Departmental Emergency Committee (CDE) (28); comprised of representatives of the Departmental Administration, the Ministry of Social Development, the Ministry of National Defense, the National Fire Department, the National Police and the Ministry of Public Health (29).</td>
</tr>
<tr>
<td>1.10</td>
<td>Leadership from Chief Medical Officer of Health or another top scientific official</td>
<td>Yes – Chief Medical Officer advises Cabinet and chairs inter-ministerial task force and leads team of senior health officials (5).</td>
<td>Yes (30).</td>
<td>Yes – Director General of Health advises the Minister of Public Health and the council of ministers on COVID-19 matters (31,32).</td>
</tr>
<tr>
<td>1.11</td>
<td>Pandemic funding</td>
<td>Yes – Towards the purchase of PPE, staffing and infrastructure (33,34), and a financing program of socio-economic measures.</td>
<td>Yes – 4 stages of fiscal measures beginning with immediate support for preventive and medical services, small merchants and small-to-medium enterprises, and financial support for individuals quarantined/self-quarantined (35,36).</td>
<td>Yes – COVID solidarity fund (37).</td>
</tr>
<tr>
<td>1.12</td>
<td>Level of Government that decides policy</td>
<td>Central – Multisectoral under the guidance of Cabinet (38).</td>
<td>Mixed – Horizontal coordination at the strategic level facilitated through the Central Safety Management Committee chaired by the prime minister; Ministry of Interior and Safety Public Health Disaster Response Division coordinated closely with Ministry of Health and Welfare (23).</td>
<td>Central – The president of the republic is advised by an Honorary Scientific Advisory Group (GACH) (39); It is the responsibility of the Ministry of Public Health (MSP) (31,40) to lead the national response, carry out risk assessments, and define the need to convene other organizations for the multisectoral response.</td>
</tr>
<tr>
<td>1.13</td>
<td>Level of Government that implements policy</td>
<td>Mixed – Ministers of Health and National Security responsible for coordinating implementation but sub-national governments and decentralized regional health authorities implement the measures (38).</td>
<td>Mixed – Central government, along with provincial and local governments, implement the infectious disease prevention and control policy, together with a network of 256 Public Health Centers and medical institutions (23,41).</td>
<td>Central (31,42).</td>
</tr>
</tbody>
</table>
2. Timely Implementation of Effective Interventions to Prevent the Spread of COVID-19

The comparative exercise revealed several strengths in the response to COVID-19 in Trinidad and Tobago. For most of the indicators assessed, the level of stringency was as high in Trinidad and Tobago as in both Uruguay and South Korea. However, as depicted in Figures 2A and 2B, the timeliness of implementation lagged in Trinidad and Tobago in nine out of 16 interventions compared to Uruguay, and in two compared to South Korea.

- Trinidad and Tobago introduced its most stringent measure on face masks about five months after the country reached 0.1 deaths per one million population. This was nearly five months later than Uruguay.
- Trinidad and Tobago introduced its most stringent measures on income support almost two months after the country reached 0.1 deaths per one million population (and nearly two months later than Uruguay), including a salary relief grant ($1500 per month for three months) for individuals who lost their jobs due to the pandemic (43).
- Trinidad and Tobago introduced programs to support access to PPE in the general population nearly one month after the country reached 0.1 cases per one million population, including the coordination with the non-governmental organization Foundation for the Enhancement & Enrichment of Life (FEEL) to deliver cloth face masks nationwide (44). This was about two months later than South Korea and one week later than Uruguay.
- Trinidad and Tobago introduced some of its strictest containment measures (school and workplace closing, cancellation of public events, stay at home, and restrictions on gatherings and internal movement) earlier than South Korea.

There were no policy gaps in terms of the stringency of measures introduced by Trinidad and Tobago relative to Uruguay or South Korea.
Table 4. Stringency levels in the strictest interventions in Trinidad and Tobago compared to Uruguay and South Korea

<table>
<thead>
<tr>
<th>Indicator code</th>
<th>Indicator</th>
<th>LAC country</th>
<th>Comparators</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Trinidad and Tobago</td>
<td>Uruguay</td>
</tr>
<tr>
<td>M1</td>
<td>School closing</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M2</td>
<td>Workplace closing</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>M3</td>
<td>Cancellation of public events</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M4</td>
<td>Recommendations on gatherings</td>
<td>High</td>
<td>No measures</td>
</tr>
<tr>
<td>M5</td>
<td>Close public transport</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>M6</td>
<td>Stay at home</td>
<td>Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>M7</td>
<td>Restrictions on internal movement</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M8</td>
<td>International travel restrictions</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M9</td>
<td>Public info campaigns</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M10</td>
<td>Income support</td>
<td>High</td>
<td>Moderate</td>
</tr>
<tr>
<td>M11</td>
<td>Debt/contract relief for households</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M12</td>
<td>Use of masks or face coverings</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M13</td>
<td>Programs to support food security</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M14</td>
<td>Programs to support housing expenses</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M15</td>
<td>Programs to support self-isolation</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>M16</td>
<td>Programs to support access to PPE in the general population</td>
<td>High</td>
<td>High</td>
</tr>
</tbody>
</table>

**Abbreviations:** PPE = personal protective equipment

**Sources:** Trinidad and Tobago: M1 (45), M2 (46), M3 (47), M4 (48), M5 (48), M6 (47), M7 (47), M8 (49), M9 (50), M10 (43), M11 (51), M12 (52), M13 (53), M14 (52–54)(51,54–56), M15 (33,56–59), M16 (44). **Uruguay:** M1 (60), M2 (61), M3 (61), M5 (62), M6 (61), M7 (61), M8 (61,63,64), M9 (50), M10 (61), M11 (61), M12 (65), M13 (61), M14 (66,67), M15 (61), M16 (61). **South Korea:** M1 (68,69), M2 (70), M3 (71), M4 (72), M6 (73), M7 (73), M8 (74), M9 (50), M10 (75), M11 (76), M12 (77), M13 (78), M14 (36,79), M15 (80,81), M16 (82)
Figure 2A. Timeline of the introduction of measures in Trinidad and Tobago compared to Uruguay

<table>
<thead>
<tr>
<th>Week</th>
<th>Month</th>
<th>Trinidad and Tobago</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M1 (45), M2 (46), M3 (47), M4 (48), M5 (48), M6 (47), M7 (47), M8 (49), M9 (50), M10 (43), M11 (51), M12 (52), M13 (53), M14 (51,54–56), M15 (33,56–59).</td>
<td>M1 (60), M2 (61), M3 (61), M5 (62), M6 (61), M7 (61), M8 (61,63,64), M9 (50), M10 (61), M11 (61), M12 (65), M13 (61), M14 (66,67), M15 (61), M16 (61).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Notes: There were measures in place for M8 before March 22. Restrictions for international travel from China were introduced on January 30, and five countries were added to list on February 27: South Korea, Italy, Iran, Japan, and Singapore. We also have two different dates for the introduction of M9: March 4 (source: Oxford COVID-19 Government Response Tracker database) and early February (source: Government informants).</td>
<td></td>
</tr>
</tbody>
</table>
Figure 2B. Timeline of the introduction of measures in Trinidad and Tobago compared to South Korea

Sources: Trinidad and Tobago: M1 (45), M2 (46), M3 (47), M4 (48), M5 (48), M6 (47), M7 (47), M8 (49), M9 (50), M10 (43), M11 (51), M12 (52), M13 (53), M14 (51, 54–56), M15 (34, 57–60) (33, 56–59). South Korea: M1 (68, 69), M2 (70), M3 (71), M4 (72), M6 (73), M7 (73), M8 (74), M9 (50), M10 (75), M11 (76), M12 (77), M13 (78), M14 (36, 79), M15 (80, 81), M16 (82).

Notes: There were measures in place for M8 before March 22. Restrictions for international travel from China were introduced on January 30, and five countries were added to list on February 27: South Korea, Italy, Iran, Japan, and Singapore. We also have two different dates for the introduction of M9: March 4 (source: Oxford COVID-19 Government Response Tracker database) and early February (source: Government informants).
3. Healthcare Sector Responses

3.1 Test

Whereas the comparator countries’ national policies are for open public testing, including for asymptomatic individuals, Trinidad and Tobago offers testing only for those with COVID-19 symptoms. Trinidad and Tobago reports 26.15 tests per confirmed case, representing a larger burden of COVID-19 in the community compared to South Korea and Uruguay. Compared to comparator countries, Trinidad and Tobago has fewer laboratories able to process COVID-19 tests and only offers testing in hospitals with emergency rooms, one health centre in each county in Trinidad and one in Tobago (eight total).

Table 5. Screening and testing measures

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Trinidad &amp; Tobago</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>National Testing Policy</td>
<td>Anyone with symptoms (83).</td>
<td>Open public testing (incl. asymptomatic) (83).</td>
<td>Open public testing (incl. asymptomatic) (83).</td>
</tr>
<tr>
<td>3.2</td>
<td>Tests per confirmed case</td>
<td>26.15 (84)</td>
<td>209.1 (83)</td>
<td>136.9 (85)</td>
</tr>
<tr>
<td>3.3</td>
<td>Institutions with lab capacity to process COV-19 tests</td>
<td>3 (86)</td>
<td>96 (87)</td>
<td>13 (88)</td>
</tr>
<tr>
<td>3.4</td>
<td>Type of screening centres to administer COV-19 tests</td>
<td>Hospital or health centre (86,89).</td>
<td>Hospital and community (90).</td>
<td>Hospital and community (91).</td>
</tr>
<tr>
<td>3.5</td>
<td>Description of screening and testing measures</td>
<td>Surveillance testing is undertaken in one primary care facility in each of the eight counties; Only patients exhibiting relevant symptoms are tested, including on a walk-in basis (92).</td>
<td>Drive through testing facilities; expanded testing centres to alleviate pressure on hospitals and clinics (90).</td>
<td>Local test kit production (93); obligatory testing if admitted to health care facility (61); testing offered at home; random testing in areas with outbreaks.</td>
</tr>
</tbody>
</table>
3.2 Trace

Trinidad and Tobago has a similar contact tracing policy and strategy to South Korea and Uruguay.

Table 6. Contact tracing policies

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Trinidad &amp; Tobago</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.6</td>
<td>Contact tracing policy</td>
<td>All cases without exception (83)</td>
<td>All cases without exception (83)</td>
<td>All cases without exception (94).</td>
</tr>
<tr>
<td>3.7</td>
<td>Contact tracing strategy</td>
<td>Case identification, contact tracing, and symptom monitoring (95).</td>
<td>Case identification, contact tracing, and mandatory quarantine for identified confirmed and suspected cases (96).</td>
<td>Case identification and self-directed isolation plus contact tracing (94).</td>
</tr>
<tr>
<td>3.8</td>
<td>Other policies or mechanisms</td>
<td>Gyms (and potentially other institutions) are required to record contact information for all persons entering and leaving so that contact tracing can occur (97).</td>
<td>Opened 600 screening centres (98); Epidemic Intelligence Surveillance officers permitted to draw on data sources including facility visits, credit card transaction logs, cellular GPS data, and CCTV; patient trajectories were made public (90,96).</td>
<td>App to alert individuals when they were in close proximity to a person with COVID-19 (99); telehealth and a centralized database for epidemiological reporting (61); synchronized case management and follow-up (100).</td>
</tr>
</tbody>
</table>

3.3 Treat

Trinidad and Tobago had fewer ventilators before COVID than comparator countries but has made more available. The number of intensive care unit (ICU) beds has remained the same as of August 2020.

Table 7. Health system capacity and adaptations

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Trinidad &amp; Tobago</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.9</td>
<td>Daily outpatient visits: Jan 2020 to July 2020</td>
<td>Undetermined</td>
<td>Undetermined</td>
<td>Undetermined</td>
</tr>
<tr>
<td>3.10</td>
<td>Existing (pre-COVID) ICU capacity</td>
<td>1.6 per 100,000 population (101)</td>
<td>10.6 per 100,000 population (102)</td>
<td>19.9 per 100,000 population (103)</td>
</tr>
<tr>
<td>3.11</td>
<td>ICU capacity August 2020</td>
<td>1.6 per 100,000 population (101)</td>
<td>Undetermined</td>
<td>23 per 100,000 (88)</td>
</tr>
<tr>
<td>3.12</td>
<td>ICU occupation rate August 2020</td>
<td>13% (101)</td>
<td>Undetermined</td>
<td>52.4% (88)</td>
</tr>
<tr>
<td>3.13</td>
<td>Existing (pre-COVID) ventilator capacity</td>
<td>4.9 per 100,000 population (101)</td>
<td>19.11 per 100,000 (104)</td>
<td>18.8 per 100,000 (88)</td>
</tr>
<tr>
<td>3.14</td>
<td>Ventilator capacity August 2020</td>
<td>6.4 per 100,000 population (101)</td>
<td>Undetermined</td>
<td>Undetermined</td>
</tr>
</tbody>
</table>
In Daegu, officials created about 400 additional negative pressure beds during the crisis (96).

In March the government expanded the number of ICU beds and increased the amount of specialized equipment and respirators in healthcare facilities nationally (106,107).

Table 8. Health care workforce, adaptations and supplies

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicator</th>
<th>Trinidad &amp; Tobago</th>
<th>South Korea</th>
<th>Uruguay</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.16</td>
<td>Existing (pre-COVID) doctors</td>
<td>4.2 per 1,000 population (103)</td>
<td>2.4 per 1,000 population (108)</td>
<td>5.1 per 1,000 population (103)</td>
</tr>
<tr>
<td>3.17</td>
<td>Existing (pre-COVID) nurses</td>
<td>4.1 per 1,000 population (103)</td>
<td>7.2 per 1,000 population (109)</td>
<td>1.9 per 1,000 population (103)</td>
</tr>
<tr>
<td>3.18</td>
<td>COVID-19 health workforce adaptations</td>
<td>Invitation of retired health professionals to express their interest and availability to be contracted should there be a surge of COVID-19 cases; addressing the shortage of ICU nurses by a special arrangement with the University of the West Indies for the training of local nurses and recruitment of ICU nurses from Cuba (5).</td>
<td>Additional workers trained in contact tracing. Additional healthcare workers hired or volunteered to aid in the crisis in some cities (96).</td>
<td>Re-training of staff to provide ICU care; expedition of registration of healthcare workers with the Ministry of Health; expedition of registration for medical trainees; program to allow public officials to perform as volunteers in different actions coordinated by the Ministry of Public Health (40,61).</td>
</tr>
<tr>
<td>3.19</td>
<td>PPE for healthcare workers</td>
<td>PPE Availability: Numbers unknown, described as &quot;adequate&quot; with some numbers available through news outlets (105).</td>
<td>PPE Availability: Early shortages limited by penalizing export and hoarding of PPE.</td>
<td>PPE Availability: Initial shortage of medical supplies (Feb 2020) (111).</td>
</tr>
</tbody>
</table>

Adaptations:
Recommendations for PPE Availability: Early shortages limited by penalizing export and hoarding of PPE.
Adaptations: None
Adaptations: Guidance on extended use and reprocessing of N95
<table>
<thead>
<tr>
<th></th>
<th>Domestic Production</th>
<th>Purchasing/Procurement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Local university to produce face shields (105).</td>
<td>In case of shortages the country has access to emergency stock in Panama (110).</td>
</tr>
<tr>
<td></td>
<td>Doubled domestic production of PPE goods.</td>
<td>Government purchased 80% of the mask supply from Korean manufacturers early in the pandemic to secure mask supply (96).</td>
</tr>
<tr>
<td></td>
<td>Coordinated manufacturing of masks by the Ministry of Defence (113).</td>
<td>Central government coordinated purchasing of PPE and medical supplies (114).</td>
</tr>
</tbody>
</table>
References (Trinidad and Tobago)


32. El Observador. Asqueta: “No podemos eliminar el virus, tenemos que inmunizarnos de a poco.” El Observador [Internet]. 2020 Abril [cited 2020 Sep 24]; Available from:
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