



## BCHT Emerging Voices

Sharing fresh perspectives on key biomedical topics

### Advances in Data Science and Medicine Reveal the Contrasting Impact of COVID-19 Across Continents

by JULIANA MUEGGE for Berkeley Center for Health Technology, University of California, Berkeley

O  
v  
e  
r  
v  
i  
e  
w

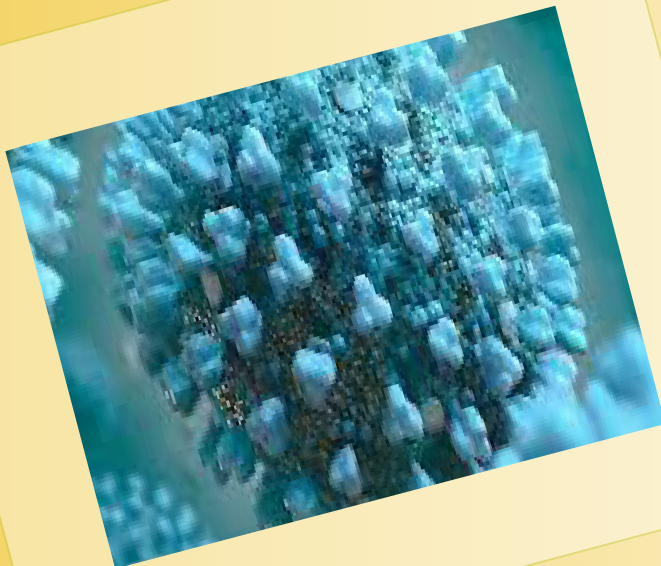
*The Coronavirus has swept across every continent around the globe. It is what all of us have in common, whether there are 3,000 miles between us, or whether I can see you just six feet away. However, despite the world's shared desire to get rid of COVID-19, many countries are struggling to stop its spread. This is because intentions do not always correspond with behavior. People must give up normalcy in order to combat the virus, and that is a hard thing to do. Many people are unwilling to wear masks and social distance.*



**A**t the start of the pandemic, I was ready to exchange a California summer for the humid, 60-degree weather in the Riobamba region of Ecuador. Those who encouraged me to take part in the program called it a life-changing trip, a unique cultural exchange experience only found through the Amigos de las Américas Program. I could visualize the experience - going to the market with my host family, learning about Andean culture, going to dances, meeting their children and discovering their interests. For months, we trained, preparing by practicing our Spanish, journaling, and learning how to be respectful of different customs.



David Torres Costales



**I**n an instant, COVID-19 caused a wave of shutdown, unrest and social and economic devastation. In March 2020, travel bans were instituted overnight, in order to contain this deadly virus. I was supposed to be in South America, living independently from my parents, soaking up knowledge, and doing my best to create a beautiful project alongside my chosen community. But instead, I was locked at home with nothing to do. So I decided to do something and start researching Ecuador and how they have handled the virus.

What I discovered was that Ecuador has the most Covid-19 cases in Latin America with 12,838 cases per million (January 2021). On the other hand, the U.S. tops the charts for the highest reported Coronavirus cases in the world with 74,650 cases per million people (January 2021). With the virus surging all over the globe, and the case numbers in the U.S. and Ecuador each faced exponential growth of infections, my interest in our common problem became the topic of a cultural research analysis: Would aspects of our two cultures either help or hinder our ability to cope? How will people, officials, leadership respond to public needs? Is the present pandemic situation a test of how we socially adapt, and accept what we can and cannot do without? To answer these questions,

I decided to focus on comparing specific locations, rather than whole countries.

### **Quito vs. Washington D.C.: A Comparison Between Capitals**

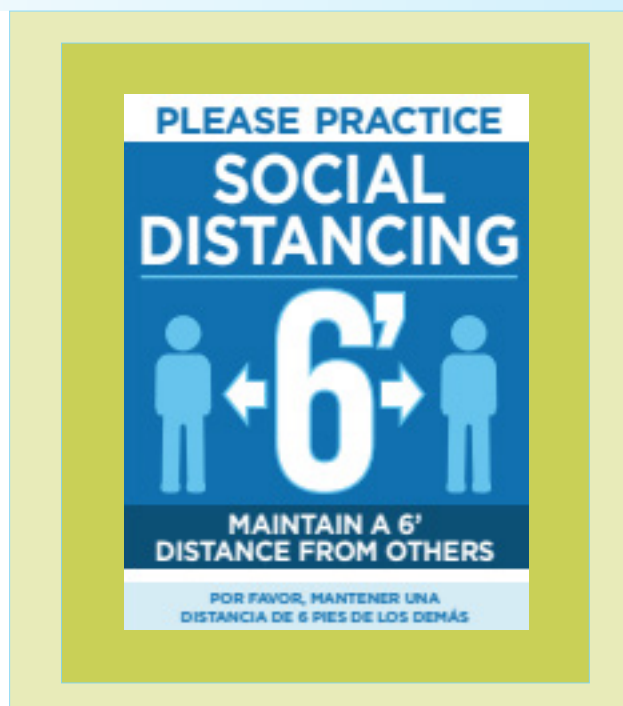
Besides pure statistics, I wanted to look more into people, the decisions they were making and how they were reacting to COVID-19, as influenced by their different environments and backgrounds. My goal was to uncover and relate social impacts in three core areas: First, to understand differences in leadership between the two countries, I compared dynamics of two capital cities. Secondly, to examine cultural barriers that affect our responses to COVID-19, I compared two densely populated port cities. Third and finally, I explored how natives are responding to the pandemic by comparing public safety measures in indigenous areas.

A country's capital is its control tower. During a pandemic, the decisions made there can be the difference between whether thousands of people live or die. Prior to the pandemic, there was already high tension in Ecuador's capital due to the increased closure of public institutions and the dismissal of more than 25,000 government officials. Ecuador's GDP has been decreasing 12.4 % annually. The built-up pressure remained stagnant for many months until the pandemic hit. During the crisis, the Minister of Health resigned, leaving Ecuador in a state of panic. At the end of May, there was a cut of 4 billion in public spending, 2,000 Ministry of Health employees were let go, and 7 public companies were shut down.

Due to the lack of Health employees, everyday volunteers from all walks of life have stepped in to help protect the safety of their community. Over 700 average citizens have a new routine: before going to work they send messages to dozens of members of their community to find out if they have developed any symptoms of COVID-19. If anyone reports back that they have noticed any negative changes in their health, a team of public health officials will be sent to that neighborhood to carry out contact tracing. This is part of a program introduced by the health ministry. Quito also hopes to slow the spread of COVID-19 by reducing vehicle mobilization, "The rules were pretty strict a couple of months ago... however with time the situation has improved, at the time the only restriction that we have is the car mobilization restriction, cars are not allowed to circulate everyday" (anonymous, December 2020).

Citizens of Quito are all reacting to the pandemic in different ways , some are incredibly stressed, especially due to the virus' economic strain, while others are adapting. In Quito, a new genre of "survival" poetry and music has emerged from the pandemic in order to lighten the spirits of those affected by the pandemic. "I think nowadays people are just trying to adjust their life to this new reality, people in a way have lost the fear to the virus, because we understand that we have to live with it. People around try to follow measures like wash hands, keep the distance and wear masks , which is very rewarding" (anonymous, December 2020).

In Washington D.C., President Donald Trump signed an executive order on August 8th to provide assistance to renters and homeowners suffering from the pandemic's economic fallout. Throughout the pandemic, Trump has consistently given misleading information to the American people, claiming that 99% of coronavirus cases are "totally harmless," and advising American citizens to inject themselves with bleach and shine UV rays under their skin. A massive following has therefore rejected the proper pandemic protocols such as abiding by U.S. Surgeon General and Centers for Disease Control (CDC) public health guidelines like wearing a mask in public. Over several months, there have been anti-quarantine protests and demands to reverse mandated business and school closures. In November a generally mask-free mob of Trump supporters took to the streets of Washington D.C. to protest ANTIFA (anti-facism), socialism, child trafficking and the Coronavirus.





Many of the protesters were libertarians who felt mask-mandates and stay at home orders were infringing on their individual rights. Other protesters were upset that they lost their jobs because of the temporary closure of non-essential businesses. “25% of U.S. adults say they or someone in their household was laid off or lost their job because of the coronavirus outbreak, with 15% saying this happened to them personally” (Parker, 2020). Trump has allowed governors to handle stay-at-home orders which has led many states to reopen sooner than scientists and the CDC have advised. Even though there is a gap between the U.S.’s and Ecuador’s economies, both countries are struggling with mass unemployment.



### ***Guayaquil vs. Los Angeles:***

#### ***A Comparison Between Port Cities***

Ecuador’s main port city, Guayaquil, has been hit hard by COVID-19. The funeral industry has become so overwhelmed that bodies have started to be laid to rest in the streets. In late March, the entire county of Guayas was turned into a national security zone, with a curfew set from 4 pm to 5 am. Public service personnel were required to wear masks, gloves, and bio-protection suits covering their entire body. Only one representative per family was permitted to go to the market. But by April, Parques de la Paz, one of Guayaquil’s largest cemeteries that can normally accept around 273 bodies per month, began seeing days with over 700 bodies removed from people’s homes. Guayaquil had initially appeared to be responding to COVID-19 correctly, so what went wrong?

## *families gather at markets and socialize*



David Torres Costales

**F**irst, most of the population relies on informal sales, so asking people to stop working in the streets means asking that they give up their daily income. Second, citizens are reluctant to give up their market culture. On weekends, it is common for large groups of families to gather at markets and buy all sorts of things in addition to socializing with the other market attendees. But with the Coronavirus, their interactions are limited, as the market is now reserved strictly for the pick-up of essential items. Finally, in overcrowded neighborhoods, especially those with limited resources, there is no way to escape the spread of the disease. Buses are a primary means of transportation in Guayaquil for many people and it is hard to stay socially distanced on public transportation. A social test, without a doubt.

**I**n the U.S., Los Angeles has its own set of cultural hurdles to deal with due to COVID-19. Shopping malls were closed until September 2020, stifling social in-person buying behavior, yet giving rise to online shopping habits. Similar to Ecuador's markets, before the pandemic, shopping malls were not only a place to purchase items but also to hang out with friends. L.A. is known as a fashion capital, and many citizens spend a lot of their time and energy shopping. Even after malls slowly began to reopen their doors, people have had to keep their distance and wear masks which prevent the same level of socialization that existed before COVID-19 hit. Culture barriers aside, in Los Angeles it is far easier to follow Social Distancing protocol than in Guayaquil. The economy of Los Angeles is far greater than that of Guayaquil, so more people can afford the cost associated with quarantining and are able to pay for "touch-free" services such as Door-Dash and Amazon Marketplace. Furthermore, L.A. has a "car-culture", meaning public transportation is not the main mode of transportation for the average citizen. There is no need for people to have to get close to each other and risk spreading COVID-19 by traveling from place to place like in Guayaquil.

### **Amazon vs. Navajo Nation: A Comparison Between Rural Areas**

The Huaorani is a tribe of about 4,000 people who are native to the Amazon. They are reacting to COVID-19 similar to how they reacted to Polio in the '60s; by fleeing father into the jungle.

The Confederation of Indigenous Nationalities of the Ecuadorian Amazon (CONFENIAE) has recommended that all ethnic groups move away from the cities, that they concentrate on cultivating their fields, that they block access to their communities, and that they resort to natural medicine (Zibell, 2020).

It is already predicted that after the pandemic, there will be a shortage of workers in the city, as well as widespread hunger. Many indigenous people do not want to go to the hospital if they contract COVID-19. Their thought process being that if they die, it's better to die at home. Additionally, there is tribal apprehension to modern medicine, with a large sum of the indigenous community only trusting natural remedies and many fearful of the tubes and machinery often used in modern medical treatment. Even if they wanted to seek treatment, there is a lack of medical equipment, and a lot of the communities lie hours away from any hospital. Many healthcare workers are in shock. Some even break down at work and refuse to enter any areas where they know COVID-19 is present. Due to the lack of resources given to them, they are worried about their patients, and their own safety. In June the Waorani Tribe started a lawsuit against the Ecuadorian government. They argued that the government did not do enough to contain the virus in the Amazon.





The court battle resulted in the Ministry of Health agreeing to send Medical teams into the Waorani community. Additionally, the court also ordered the Ministry of Environment and water to send a report detailing illegal mining and drug trafficking activities that occur in their territory. It is believed that these practices have been a part of the reason that there are so many cases within rural tribes.

The Navajo Nation has been one of the hardest-hit areas by Coronavirus in the US. The Navajo Nation stretches across urban and rural areas. Those who live away from society often do not have access to proper healthcare, cell phones, or running water. This means that the stay at home orders went largely ignored because without water to drink or a refrigerator to store food many needed to leave their homes to stay alive. In urban areas, many Navajos are homeless. Coronavirus spreads quickly in homeless shelters and the tight motels that many people go to to get off the streets. Another concern is that people of Native American descent are more prone to underlying health conditions such as alcoholism, diabetes, and heart disease, making them more at risk for COVID- 19. This puts the members of the Navajo nation in a challenging position. They are extremely vulnerable to the virus and many fear for the safety of their loved ones. Both countries have a long way to go when it comes to protecting their indigenous populations.



### **Emerging Solution: Vaccine Protocol**

**W**e are beginning the process of recovery. Ecuador is planning on partnering with private sector health providers to distribute vaccine doses to about 9 million adults in between March and September of 2021. The Ecuadorian Government has set aside 200 million dollars to purchase vaccines from several companies. The government hopes to receive 50,000 doses of the vaccine from Pfizer Inc and BioNTech SE by January, which will first be given to senior citizens in shelters and medical personnel who work with patients with COVID-19. Being that the vaccine requires two-doses, that order would be able to vaccinate 25,000 people. Ecuador plans to have about 400 distribution centers which includes primary care centers in rural areas, and 10,000 vaccination points such as pharmacies, universities and even companies with medical offices.



**T**he United States has pre purchased hundreds of millions of vaccines from Pfizer and Moderna as part of a new multibillion dollar federal program dubbed "Operation Warp Speed". The country is prioritizing everyone 65 and older, people 16 and older with high-risk medical conditions, medical workers, and nursing home staff. Trump promised to vaccinate 20 million people by the end of 2020, but fell short of this goal as only 6 million Americans were vaccinated by New Years. However, even if we had enough vaccines for everyone, it may be a challenge to get Americans to actually take them. In Los Angeles, roughly 20- 40% of medical workers refused to get vaccinated. If nurses and doctors that see the severity of the virus everyday are not willing to take the vaccine, how will the public respond?

### Conclusion

Like most communities around the world, the people of Ecuador and the U.S. struggle to stay socially distant in the midst of COVID-19 and each country faces detrimental deficits in leadership. We witnessed proof that being a bigger, wealthier nation does not matter if the people within that nation do not share a unified perspective or behave safely. If multiple groups have extremely different ideas of what is best for society during a public health crisis, their beliefs clash -- resulting in a casualty situation for general safety. Furthermore, from an emotional perspective, we are all missing aspects of our lives due to Coronavirus, whether it be our trips to the market or going to the mall. We are all having a hard time staying home, whether it be by choice or necessity. We are all lacking the proper equipment to deal with a deadly pandemic, whether it be a deficit of masks or testing kits.

Regardless of the richness, prosperity, or power of a country, our lives have changed in a common way, upset by the threat to our families, our social wellbeing, and our day-to-day freedoms and traditions that we all hold even closer than before. Thinking about the beauty of Ecuadorian culture, that I was unable to experience directly, I am convinced that closeness of the people, the trust of the community and the appreciation for family interests will represent a source for a strong rebound - both socially, and economically. In the coming months, I hope to contribute to Ecuador's path to regaining prosperity through the Amigos Program. In many ways, the cultural outlook and exchange opportunity will be entirely different than 12 months ago. Is there more to learn? Is there more I can give? How will my voice be heard or my actions felt? Without a doubt, we are in moments of rebuilding.



## Sources

Agila, Gabriela Ruiz. "How Is Ecuador Facing up to COVID-19?" OpenDemocracy, 26 Mar. 2020, [www.opendemocracy.net/en/democraciaabierto/c%C3%B3mo-est%C3%A1-ecuador-viviendo-el-brote-de-covid19-en/](http://www.opendemocracy.net/en/democraciaabierto/c%C3%B3mo-est%C3%A1-ecuador-viviendo-el-brote-de-covid19-en/)

"America." (Province, Ecuador) - Population Statistics, Charts, Map and Location, 2020, [www.citypopulation.de/php/ecuador-admin.php?adm1id=01](http://www.citypopulation.de/php/ecuador-admin.php?adm1id=01)

"Análisis De La Respuesta Al Covid-19 En Ecuador." Portada Universidad De Chile, [www.uchile.cl/noticias/164243/analisis-de-la-respuesta-al-covid-19-en-ecuador](http://www.uchile.cl/noticias/164243/analisis-de-la-respuesta-al-covid-19-en-ecuador).

Brown, Kimberley. "Court Forces Ecuador Government to Protect Indigenous Waorani during COVID-19." Mongabay Environmental News, 20 July 2020, [news.mongabay.com/2020/06/court-forces-ecuador-government-to-protect-indigenous-waorani-during-covid-19/](http://news.mongabay.com/2020/06/court-forces-ecuador-government-to-protect-indigenous-waorani-during-covid-19/)

Cordova, Luis A Medina. "Narrating a Global Crisis from Guayaquil in Real Time: Early Literary Responses to the COVID-19 Outbreak in Latin America." Wiley Online Library, John Wiley & Sons, Ltd, 27 Dec. 2020, [onlinelibrary.wiley.com/doi/10.1111/blar.13172](https://onlinelibrary.wiley.com/doi/10.1111/blar.13172)

"Ecuador Prepares for COVID-19 Vaccination Campaign with Private Sector." Reuters, Thomson Reuters, 16 Dec. 2020, [www.reuters.com/article/us-health-coronavirus-vaccine-ecuador/ecuador-prepares-for-covid-19-vaccination-campaign-with-private-sector-idUSKBN28Q200](http://www.reuters.com/article/us-health-coronavirus-vaccine-ecuador/ecuador-prepares-for-covid-19-vaccination-campaign-with-private-sector-idUSKBN28Q200)

Danner, Chas, and Matt Stieb. "What We Know About the U.S. COVID-19 Vaccine Distribution Plan." *Intelligencer*, 19 Dec. 2020, [nymag.com/intelligencer/2020/12/what-we-know-about-u-s-covid-19-vaccine-distribution-plan.html](http://nymag.com/intelligencer/2020/12/what-we-know-about-u-s-covid-19-vaccine-distribution-plan.html)

"Coronavirus: Médicos Denuncian Falta De Seguridad." Ecuavisa, 19 Mar. 2020, [www.ecuavisa.com/articulo/noticias/nacional/582151-coronavirus-medicos-denuncian-que-atienden-sin-medidas](http://www.ecuavisa.com/articulo/noticias/nacional/582151-coronavirus-medicos-denuncian-que-atienden-sin-medidas)

Diamond, Frank. "Q&A: How Navajo Nation Dealt With COVID-19." *Infection Control Today*, 10 Sept. 2020, [www.infectioncontroltoday.com/view/q-and-a-how-navajo-nation-dealt-with-covid-19](http://www.infectioncontroltoday.com/view/q-and-a-how-navajo-nation-dealt-with-covid-19)

Hallo, Alejandro, Alejandra Rojas, and Carlos Hallo. "Perspective from ecuador, the second country with more confirmed cases of coronavirus disease 2019 in south america: a review." *Cureus* 12.3 (2020)

"In Ecuador, a Coordinated Humanitarian Response to COVID-19." OCHA, 4 May 2020, [www.unocha.org/story/ecuador-coordinated-humanitarian-response-covid-19](http://www.unocha.org/story/ecuador-coordinated-humanitarian-response-covid-19)

"In Numbers: COVID-19 Across the Navajo Nation." *Navajo Times*, 26 Oct. 2020, [navajotimes.com/coronavirus-updates/covid-19-across-the-navajo-nation/](http://navajotimes.com/coronavirus-updates/covid-19-across-the-navajo-nation/).

"Información Verificada De La Llegada Del COVID-19 Al País." *Coronavirus Ecuador*, [www.coronavirusecuador.com/galeria-multimedia/](http://www.coronavirusecuador.com/galeria-multimedia/)

León, José María. "Ecuador Gives Glimpse Into Pandemic's Impact on Latin America." *The New York Times*, *The New York Times*, 8 Apr. 2020, [www.nytimes.com/2020/04/08/world/americas/ecuador-coronavirus.html](http://www.nytimes.com/2020/04/08/world/americas/ecuador-coronavirus.html)

(continued)



**Sources** (continued)

"Localising an Asset-Based COVID-19 Response in Ecuador." The Lancet, Apr. 2020, [www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)30851-5/fulltext](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30851-5/fulltext) McPhillips, Deidre. "This Is How Long It Could Take to Vaccinate All the Adults in the US against Covid-19." CNN, Cable News Network, 21 Jan. 2021 [www.cnn.com/2021/01/21/health/us-vaccination-timeline-analysis/index.html](http://www.cnn.com/2021/01/21/health/us-vaccination-timeline-analysis/index.html)

Mozes, Alan. "COVID-19 Ravages the Navajo Nation." WebMD, WebMD, 9 June 2020, [www.webmd.com/lung/news/20200609/covid-19-ravages-the-navajo-nation](http://www.webmd.com/lung/news/20200609/covid-19-ravages-the-navajo-nation)

Ortiz-Prado, Esteban, et al. "Epidemiological, socio-demographic and clinical features of the early phase of the COVID-19 epidemic in Ecuador." medRxiv (2020)

Rabin, Roni Caryn, and Chris Cameron. "Trump Falsely Claims '99 Percent' of Virus Cases Are 'Totally Harmless'." The New York Times, The New York Times, 5 July 2020, [www.nytimes.com/2020/07/05/us/politics/trump-coronavirus-factcheck.html](http://www.nytimes.com/2020/07/05/us/politics/trump-coronavirus-factcheck.html)

Shalby, Coleen. "L.A. County Allowing Shopping Malls, Nail Salons and Playgrounds to Reopen." Los Angeles Times, Los Angeles Times, 30 Sept. 2020, [www.latimes.com/california/story/2020-09-30/l-a-county-will-allow-malls-nail-salons-and-outdoor-playgrounds-to-reopen](http://www.latimes.com/california/story/2020-09-30/l-a-county-will-allow-malls-nail-salons-and-outdoor-playgrounds-to-reopen)

Torres, Irene, and Fernando Sacoto. "Localising an asset-based COVID-19 response in Ecuador." The Lancet 395.10233 (2020): 1339

Valencia, Alexandra. "Ecuador Mobilizes COVID-19 Watchers to Contain Pandemic in the Capital." Reuters, Thomson Reuters, 4 Sept. 2020, [www.reuters.com/article/us-health-coronavirus-ecuador/ecuador-mobilizes-covid-19-watchers-to-contain-pandemic-in-the-capital-idUSKBN25V274](http://www.reuters.com/article/us-health-coronavirus-ecuador/ecuador-mobilizes-covid-19-watchers-to-contain-pandemic-in-the-capital-idUSKBN25V274)

Zhang, Stephen X., et al. "Developing and testing a measure of COVID-19 Organizational Support of Healthcare Workers—Results from Peru, Ecuador, and Bolivia." Psychiatry Research (2020): 113174

Zibell, Matías. "Coronavirus En Ecuador: Así Hacen Frente Al Coronavirus Los Indígenas De La Amazonía (y Cómo Se Preparan Para Una Postpandemia De Hambre, Desempleo y Trueque)." BBC News Mundo, BBC, 26 May 2020, [www.bbc.com/mundo/noticias-america-latina-52781113](http://www.bbc.com/mundo/noticias-america-latina-52781113)

**Juliana Muegge** is a Junior at San Ramon Valley High School. She has an interest in social research, anthropology, and public health. Juliana can be found on Instagram and at [julianamuegge](https://www.instagram.com/julianamuegge). She aspires to positively impact her local community as well as cultural programs that promote interactive channels of knowledge and encourage social growth.



BERKELEY CENTER  
FOR HEALTH TECHNOLOGY

The **BERKELEY CENTER FOR HEALTH TECHNOLOGY** (BCHT) conducts research into existing and improved criteria for coverage, consumer cost-sharing, and other dimensions of management for biomedical innovations. BCHT also provides academic programs for UC Berkeley graduate students and professional development for health care organizations whose senior staff would benefit from deeper understanding of the innovation, coverage, and reimbursement environment.