

A BIOLOGICAL
BORDER
MODEL FOR
PUERTO RICO



Foundation
for Puerto Rico



Foreword	3
Introduction: Stay Safe Stay Open	5
Safety First	5
The Opportunity in the Crisis to Accelerate Recovery	7
A Watershed Moment: Strengthening the Island's Economic Position and Potential	8
The New Possibilities of a Destination Biological Border (to address symptomatic & asymptomatic passengers)	10
What do we mean by a destination biological border?	10
Maintaining a United Front	12
Airport Biological Border Model for Puerto Rico	12
Universal testing of arriving passengers	13
Testing Options	14
Contact Tracing	15
Data and Transparency	16
Testing and contact tracing logistics: Test, trace, and isolate	17
Airport Logistics and Passenger Flow – Enhancing the Current Bio Border Model	17
Positive case	19
Quarantine facilities	20
Legal framework and Federal regulatory requirements	20
Public Education Campaign	20
Conclusion	21

Foreword

For the last decade, Foundation for Puerto Rico has been committed to identifying new, high impact opportunities for Puerto Rico's economic transformation. We catalyzed the creation of an entrepreneurial ecosystem that embraces non-physical innovation-driven exports as the new means of value creation in the 21st century.

We have argued for the economic growth opportunity that would come with the development of our island as an experiential destination for visitors and for the creation of a non-governmental Destination Marketing Organization to promote it. New records have been set for the number of visitors and total economic activity generated. After Hurricane Maria, we undertook efforts to ensure the rebuilding of our destination happened from the "bottom up" creating opportunities for local communities and small businesses throughout the island.

Charles Dickens began his novel about the French Revolution, *A Tale of Two Cities*, with a seemingly contradictory statement – It was the best of times, it was the worst of times. That has been the case for Puerto Rico after such devastations like Hurricane Maria, the earthquakes in the south, and now the COVID-19 crisis. In the case of this pandemic, it not only threatens both our physical safety and our livelihoods, but while we protect ourselves against the peril of infection, it increases the dangers from economic collapse.

Once again, our island is faced with great economic challenge and Foundation for Puerto Rico is focused on identifying key areas that would benefit from attention,





investment, and refreshed policy implementation to ensure we can truly recover and transform towards a better future. Like we say: “There is no future in rebuilding the past”. And within the extraordinary disruption that this crisis brings, unexpected opportunities can arise.

There are many examples in history where prospering societies and nations have lost their advantages and their futures by being unable to understand change and adapt to it. Crises are moments when change happens very quickly and those who can understand the implications and act upon them can leap ahead of those who do not. We believe we can identify and pursue novel possibilities and pathways that can both safeguard our health and accelerate our economic recovery.

The Airport Biological Border Model we present here proposes to restore tourism and our visitor destination within a far shorter time frame than conventional thinking would have us believe while at the same time protecting us from a new burden of infection that could enter our island on every arriving flight. Making this happen does not require the equivalent of John F. Kennedy’s moon launch. It simply requires us to adopt and integrate emerging solutions in an agile and imaginative fashion.

The good news is that a large part of what is needed is already in place. The Puerto Rico Department of Health is already interviewing all arriving passengers, obtaining all relevant information, and testing many of them. We need to perform a newer more reliable test on all arriving passengers and robustly quarantine any who test positive. We need to put in place technology-driven contact tracing that allows us to monitor positive cases, enforce their quarantine at adequately equipped facilities and identify and protect anyone they may have been in contact with. Manual systems such as the ones currently in place will not accomplish these objectives. This approach can provide solutions not only for arriving passengers but for the local community spread as well.

In the following pages, we describe what needs to be done to fully implement the airport biological border. If we can come together and work towards this vision, we can dramatically accelerate Puerto Rico’s economic recovery while protecting locals and visitors alike. It could make the difference between another decade of economic retrenchment or for us to leapfrog the world to success and for Puerto Rico to shine in this new era of COVID-19.



Introduction: Stay Safe | Stay Open

The day after Puerto Rico received its first confirmed case of COVID-19, the government enacted one of the earliest and strictest lockdown protocols in the US, leading many states in its swift and decisive action. As a result, we have been fortunate to so far prevent a widespread outbreak of the virus and a breakdown of the local healthcare system. Puerto Rico currently has one of the lowest death rates (26/million) in the nation, yet, the quarantine has had a catastrophic impact on our community and fragile economy, causing many businesses to close until further notice and for more than 329,000 people to file for unemployment¹, a number that will continue to grow.

The socioeconomic impact of the lockdown has been severe – disproportionately impacting low wage workers in the service and retail industries. The pressure of reopening the economy may lead to decisions that could potentially increase virus exposure for Puerto Ricans. It is imperative that we protect our residents, both in health and economic terms.

Faced with decisions for how to best design our economic recovery strategy, we are presented with a unique opportunity: For Puerto Rico to reopen its economy sooner rather than later while taking all the deliberate measures to **stay safe**. Given our relative lead in controlling the virus, Puerto Rico is in a strong position to successfully meet this challenge.

Foundation for Puerto Rico proposes achieving this through the implementation of a destination **Biological Border**

model to control the spread of COVID-19 in our island. This model involves placing a system at the Luis Muñoz Marín (LMM) International Airport – currently our only point of entry to the island - to identify, track, and manage positive COVID-19 cases from inbound travelers. Certainly, after all that the Puerto Rican people have sacrificed in getting to this point, Puerto Rico cannot afford, either economically or from a public health perspective, to be forced back into lockdown driven by a significant outbreak of new infections resulting from undetected cases of COVID-19 from visitors.

This concept is but one piece of the puzzle. The government and the private sector need to prioritize healthcare investments and any additional efforts to mitigate adverse scenarios, accelerate our recovery and future economic development at the national level. These investments and initiatives should be in synchrony with the destination biological border at the airport for this model to be completely successful.

Safety First

Even as the trajectory of COVID-19 symptoms and daily positive cases begin to decline, we will not live in a post-pandemic world until a vaccine is developed or herd immunity is established. Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases, recently said that a COVID-19 vaccine could take 12 to 18 months to develop, test and approve for public use. And, without one, the virus is expected to circulate for years. Therefore, it is

¹<http://sincomillas.com/mas-de-21600-personas-presentaron-reclamaciones-iniciales-por-desempleo-la-semana-pasada/>

²<https://www.biopharmadive.com/news/coronavirus-vaccine-herd-immunity-covid-19/577312/>



essential that the public sector, businesses, the third sector, and citizens alike establish guidelines to allow us to safely emerge from our homes, begin working in the safest way, and keep the virus “at bay” both from spreading amongst the population or from entering Puerto Rico from the outside.

Foundation for Puerto Rico believes the island is in a unique position, in comparison to the continental U.S., to control a COVID-19 outbreak with the implementation of a Biological Border at the Luis Muñoz Marín Airport because:

- It initiated restrictive measures on March 16, 2020, earlier than any other state in the US and is maintaining them for sufficient time to suppress the spread.
- It is an island with a single point of entry, which makes it easier to control and prevent new cases arriving from the outside. For example, New Zealand has been one of the most successful countries in handling the COVID-19 pandemic. The main attributes tied to their results are: being a small island nation with a central government that is using science-based decision making by testing anyone who is suspected of being exposed, contact tracing, and creating a 4 level alert system that tell the public what health and social

measures need to be taken. In a similar fashion, Puerto Rico can reduce or eliminate the risk of new cases arriving through the airport, especially since most travelers to our island originate from places where there is a high rate of infection.

- Unlike other destinations, Puerto Rico is not dependent on a massive transportation system of trains or buses, giving travelers further control of their travel and transportation experience and environment.
- With the rapid evolution of innovative technologies surrounding molecular testing and contact tracing, Puerto Rico has many increasingly fast and affordable alternatives at its disposal that follow proven global best practices.

These dynamics give Puerto Rico a “leg up” on controlling this crisis with the right measures in place. If the Biological Border proposal gets implemented, the island can remain a healthy and secure destination for residents and visitors alike. This will have a significant positive impact in our economy without placing its population or its healthcare system at a renewed risk from infection.

The Opportunity in the Crisis to Accelerate Recovery

The visitor economy and tourism have been vital to the economic growth and recovery of the island. In 2017, a year where our island was struck by two hurricanes, tourism contributed roughly 4.3% of the Island's Gross National Product (GNP). Until the pandemic, Puerto Rico's visitor economy was recovering five times faster than New Orleans did after Katrina. Puerto Rico even became the New York Times #1 destination in 2019 and dominated Airbnb's Top 10 world destinations in 2019.

COVID-19 impacts on the island's travel industry, according to global travel intelligence firm Tourism Economics, show that demand for travel has fallen by 96% as of April 18, 2020 compared to the previous year. The total tourism losses already amount to \$474 million to date. Projections show arrival losses are expected to continue to fall -59% on average, each month, compared to 2019.

That said, current research from multiple sources, including The Harris Poll, show significant pent-up demand for travel and tourism as the US economy reopens. While many might not be willing to travel tomorrow, a growing portion of the population indicates readiness to travel between summer and fall. Surveys conducted in April illustrate a positive trend on consumer sentiment towards travel⁸:

- Americans are eager to get on the road again; 70% are already planning new—though modified—travel over the next six months.

³https://www.washingtonpost.com/world/asia_pacific/new-zealand-isnt-just-flattening-the-curve-its-squashing-it/2020/04/07/6cab3a4a-7822-11ea-a311-adb1344719a9_story.html

⁴<https://www.goodrx.com/blog/coronavirus-covid-19-testing-updates-methods-cost-availability/>

⁵Tourism Economics: Economic Impacts of Visitor Spending in Puerto Rico, May 2019

⁶<https://fortune.com/2015/08/27/hurricane-katrina-new-orleans-tourism/>

⁷Tourism Economics, COVID-19 Scenario Losses: Puerto Rico Demand

⁸LongWoods International and Miles Partnership: Travel Sentiment Survey Wave 8, April 2020





- o On their first trip (when appropriate), 55% will visit family and friends domestically.
- In response to “major purchases planned once things return to normal,” travel ranked #1 (selected by 52% of respondents), higher than buying new clothes (43%), buying household goods (33%) or attending a concert or sporting event (28%).

Because many major destinations, normally accommodating hundreds of millions of annual visitors, including New York City, New Orleans, many areas in South Florida, and international destinations including major European cities, Mexico and the Dominican Republic, will not be prepared to safely receive visitors, an early opening could put Puerto Rico at an advantage to funnel a disproportionate percentage of those potential visitors to the island safely. This is a unique set of circumstances for Puerto Rico to capitalize on, and a window of opportunity in which it can gain a long-term advantage by boosting its global standing as a major travel destination. But if that opportunity is not managed correctly and we let everyone in without a comprehensive testing, tracing, and quarantine protocol, we put ourselves at risk of needing to shut down the island once again.

In spite of the present opportunity, some are inclined to relegate tourism and the visitor economy to the final stages of reopening the economy. By doing so, we risk: 1) missing a watershed moment of economic development; and 2) sending our economy into much deeper economic recession. However, planned with care, health, and

safety as the top priority, an innovative, early reopening of the destination and a restoration of substantial visitor flows with appropriate protective measures represents a unique strategic opportunity to increase Puerto Rico’s competitiveness and accelerate its economic recovery.

A Watershed Moment: Strengthening the Island’s Economic Position and Potential

Tourism and the visitor economy are a crucial part of Puerto Rico’s economic development strategy, and a proven model with the potential to double or triple its impact as a percent of total GNP. Tourism is one of the few economic activities that has continued to grow long term since the island entered a recession in 2006. For example, the Leisure and Hospitality industry group is projected to add more jobs than any other industry in the island by 2026. Therefore, the visitor economy can continue to be an engine of growth if we work quickly and in unison to implement an innovative mitigation strategy, such as the Biological Border. The following trends illustrate why this strategy is the way forward:

1. Puerto Rico had a record-breaking year in 2019 and demonstrated strong momentum into 2020:

Puerto Rico received a record-breaking number of passenger arrivals totaling 5.2M across the San Juan, Ponce, and Aguadilla airports³. This is the highest number of airport arrivals since

⁹Destination Analysts: <https://www.destinationanalysts.com/insights-updates/>

¹⁰The Harris Poll COVID-19 Tracker: <https://theharrispoll.com/the-harris-poll-covid19-tracker/>

¹¹<https://www.efe.com/efe/usa/puerto-rico/el-turismo-unico-sector-en-crecimiento-puerto-rico-durante-la-crisis/50000110-3147247>

¹²Source: Puerto Rico Department of Labor and Human Resources as part of the Projections Managing Partnership (PMP) - July 2018: Jobs by major group industry 2016-2018



2015. 2019 lodging revenue, which includes hotel revenue and independent rental revenues⁴, saw an increase of 12%, totaling nearly \$1 billion in revenues⁴. The cruise industry had an 56.6% increase in homeport cruise passengers compared to January 2018. This demonstrates the positive impact the entire industry is having in growing the economy and fueling the local communities across the Island.

2. Tourism is a source of jobs and economic input to the island’s visitor economy. It brings new incremental investment flows to the island, not simply recirculating local capital.

The tourism sector is a source of 83,000 jobs and impacts 17 additional sectors of the economy. Oxford Economics calculated that the Q4 2019 preliminary numbers as it relates to the direct economic impact is of \$443M. The tourism sector generated 5,900 additional jobs in July 2019 vs. July 2018 (+4.8%). Training this workforce has been an investment in our labor market. If we do not reopen the destination soon, the tourism industry will begin to collapse financially and a large fraction of the 83,000 jobs could permanently disappear. Likely, we would lose much of this skilled workforce to the mainland US. Therefore, the timing of reopening is paramount.

3. Pent-up demand for travel (including “revenge tourism”) is beginning to emerge, with 70% of travelers intending to travel in the next six months.

Surveys show that most of these potential travelers in the U.S. will seek to travel to destinations closer

to home. Initially, many may choose to travel by car to adjacent places, but as the airlines demonstrate that passengers can travel safely with little risk of contagion, the appetite for air travel will grow rapidly. They will prefer short, non-stop flights and are likely to shy away from traveling internationally, particularly on long haul flights to Asia or Europe. In fact, it has been reported that international travel might not even be permitted by the state department until 2021. “Beach destinations and resorts” are at the top place surveyed travelers list as “the first trip they will take” when they feel it is safe to travel.

4. Puerto Rico has a unique competitive advantage as travel restrictions lift compared to others travel destinations.

This pent-up demand for travel is a tremendous opportunity because Puerto Rico is a unique and exotic domestic destination, with a short 2-4 hour flight from most major US cities and is currently one of the safest destinations in the USA, with the lowest numbers of positive COVID cases. Only a few states such Hawaii, Alaska, Montana, and Wyoming have comparably low rates of infection or mortality.

In terms of geographic characteristics, only Hawaii is comparable to Puerto Rico because visitors cannot drive across its border. The other main competitors are Florida, which had a late and limited lock down and is a known “hot spot,” Mexico, and other Caribbean islands. Florida and Mexico cannot control their road traffic, risking continued infections/contagion as visitors enter.

¹³Tourism Economics: Economic impact of visitor spending in Puerto Rico, May 2019

¹⁴LongWoods International and Miles Partnership: Travel Sentiment Survey Wave 8, April 2020

¹⁵<https://www.usatoday.com/story/travel/news/2020/05/04/mnuchin-too-hard-tell-when-international-travel-resume-coronavirus/3077347001/>

¹⁶<https://www.worldometers.info/coronavirus/>



Now is the moment when Puerto Rico's comparative advantage in safety and ease of access is greater than the region's top travel destinations. Capturing a fraction of this returning market, if done safely and thoughtfully, could be significant for Puerto Rico's tourism industry and an important economic stimulus for the island's economy. The COVID-19 crisis and the government's swift protection of the island's health has created an opportunity to leapfrog our tourism industry and make Puerto Rico a more competitive destination as US travel resumes.

The New Possibilities of a Destination Biological Border (to address symptomatic & asymptomatic passengers)

What do we mean by a destination biological border?

A destination biological border is a system designed to identify and stop potential pathogens from reaching and spreading in a specific destination. It may consist of a variety of microbial testing methods, contact tracing, quarantine measures and legal or regulatory requirements that travelers need to adhere to at points of entry or departure at ports or border crossings.

Currently, Puerto Rico has only the LMM airport open. We have no land borders and cruise lines are not operating. This scenario presents an opportunity to implement a biological border model that will screen, test, and trace all possible COVID-19 cases, and results in a safer destination for residents and visitors.

The Federal Government will likely keep international airports open, so it is important to implement this model as soon as possible. The other scenario, which is closing the LMM airport, can have a devastating and irreparable impact on the economy of Puerto Rico. At the same time, quarantining all arriving passengers would be impracticable as it involves thousands of new arrivals every day, nor would any visitor want to come and be forced to a 14-day quarantine.

During previous epidemics (notably Ebola), efforts have been made to identify and quarantine ill passengers by measuring body temperature with infrared sensors and thermometers. This approach is ineffective in this case because between 5% and 80% of people testing positive for COVID-19 may be asymptomatic during the early stages or even over the entire course of their infection. This staggeringly high number complicates efforts to predict the course of the virus and strategies to mitigate it. It is this characteristic of the COVID-19 that makes testing imperative.

The development of rapid molecular testing technologies permits the reliable identification of infected individuals⁸. While current supply of tests does not permit the volume required to test all incoming passengers, growth in availability is accelerating dramatically, and the necessary capacity could be available within 30-60 days, certainly enough to handle a return to historic levels of passenger arrivals over the course of the calendar year.

The implications of this breakthrough are that **Puerto Rico, having controlled local infection, with testing of arriving passengers, could become a healthy and secure destination for visitors without placing its population at renewed risk from infection.** Puerto Rico could become a unique, healthy, protected destination for many millions of people to visit at a time when many other destinations – for example, Mexico the Dominican Republic, South Florida, or New Orleans – would still be in the throes of the epidemic.

Maintaining a United Front

The measures against COVID-19 that Puerto Rico has undertaken thus far, have the potential to significantly suppress the virus locally by June 2020. The epidemiological curve has already flattened dramatically because of the lockdown and as compliance with hygienic practices and social distancing increases within the population. If this discipline is maintained, the number of daily positive cases should continue to decline.

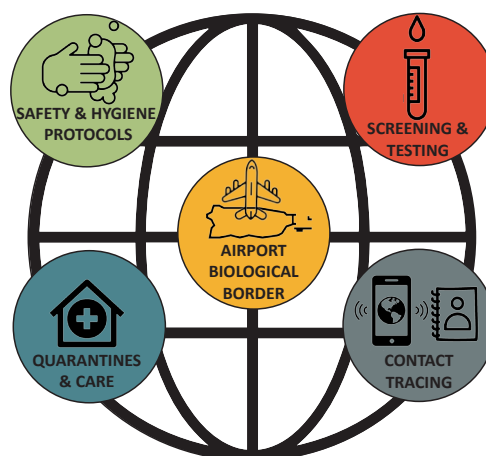
Continuing success depends on (a) Full implementation of public health measures - island wide testing and contact tracing; and (b) Continuous education to achieve near universal public adoption of hygiene and social distancing practices by individuals, organizations, and public-facing services. If these measures are fully functional, by the end of July, Puerto Rico could become a relatively COVID-19-free society. However, if Puerto Rico were to continue to receive large unrestricted flows of infectious visitors arriving at the airport, without establishing a biological border at the airport, it could undermine this progress.

New outbreaks caused by arriving travelers from abroad have been reported in Hong Kong, Singapore and South Korea, countries that had succeed in controlling the epidemic. In recent days, Israel, that has been aggressively battling COVID-19, has identified its airport as a major vulnerability. Israel's airport protections were limited to body temperature scans (adopted during the Ebola epidemic) and history interviews of arriving passengers.

Airport Biological Border Model for Puerto Rico

Because of the absence of “drive-in traffic” into Puerto Rico that continental US states experience, we can uniquely control our border by adding a new layer of biological screening to prevent the COVID-19 from entering the island. The primary elements of a biological border at LMM International Airport in San Juan include:

1. Universal screening and testing of arriving passengers
2. Contact tracing for all infected passengers
3. Health care and quarantine for infected passengers 14 days
4. Safety and hygiene protocols for tourism sectors and employers



Fortunately, the Puerto Rican government has taken major steps towards the implementation of the biological border through testing of symptomatic and some other passengers and, more recently, a screening protocol including obtaining of contact information and lodging plans for all arriving passengers.

¹⁷Epidemic curve based on molecular tests: <https://estadisticas.pr/en/covid-19>

¹⁸<https://www.npr.org/sections/coronavirus-live-updates/2020/05/10/853468647/south-korea-records-spike-in-new-coronavirus-cases-after-nightclub-outbreak>



Universal testing of arriving passengers

Universal testing of arriving passengers at the LMM airport will allow Puerto Rico to maintain and grow visitor flows and airline routes while keeping its citizens and travelers safe from contagion. To protect the local community and achieve public confidence with this initiative, it is necessary to identify arriving COVID-19 positive cases, including those who may be asymptomatic, by determining the COVID status of all arriving passengers and implementing a strict quarantine protocol helping to prevent COVID-positive cases from visitors from infecting the local population.

The Vienna International Airport is one of the few airports who is providing molecular testing at the airport. In accordance with government regulations, people travelling to Austria must either present a medical certificate which confirms negative COVID-19 test results (PCR test not older than four days), or else they are required to begin a 14-day quarantine.

To identify all positive cases, proper testing logistics will need to be put in place with the appropriate test. There are two main tests: immunological and molecular. Immunological testing is a serological test that consists in detecting antibodies in serum created as a defense mechanism against the desired pathogen, in this case against COVID-19. Therefore, it would only be effective after an immunological response (IgMs) have been created after infection, which takes approximately 5 or more days after infection. This means, a person can be infected and still have a negative result in this type of test during the acute phase of the infection.

At the time that the initial measures were put in place at the airport, the only readily available rapid tests were immunological. But today, there are a new generation of rapid molecular tests that can be used to screen passengers at the airport. Molecular testing such as PCR, is designed to identify the viral particles directly from a sample, in most cases from a nasopharyngeal swab. Molecular testing is far more accurate in determining carrier or infectious status very early in the infection as well as at later stages.

Going forward, therefore, the current immunological tests being conducted at the airport, should be replaced quickly with rapid molecular tests, capable of providing results within the hour. Since travel demand globally is down, the number of tests required at the airport will be lower, and we can expect the number of tests required to grow from perhaps 1000 daily arrivals as observed recently to as many as 6,000 by the fall, when travel demand can begin normalizing.

While the cost of testing is expected to drop as production scale and availability increase, using current testing costs as a guide, the monthly direct acquisition cost of tests would rise from \$1.6 million with current volumes to \$4.4 million by November. This investment in testing will be likely required until universal vaccination become available in 2021. This estimate does not consider any reduction in the acquisition cost of testing. Nor does it consider the likelihood that a significant number of arriving passengers will eventually bring evidence of recent testing performed at their point of origin that would reduce the number of persons being tested upon arrival. In places like Vienna, passengers are been charged \$209 for tests in order to avoid a 14-day quarantine. The government of Puerto Rico can also evaluate if they

¹⁹<https://www.viennaairport.com/pcrttest>



should charge at least the cost of the test to the traveler. Testing should be considered as an investment in our citizens health and overall economy, not just the visitor economy, but for purposes of comparison, assuming normal travel would not otherwise resume until 2021, as many as 60-80,000 jobs can be lost. Every arriving

visitor directly contributes \$700+ to the visitor economy. Restoring 10,000 daily visitors by the fall of 2020 translates to \$200+ million in monthly direct spend. In comparison, the costs of testing arriving passengers at LMM airport are low. Here are the numbers based projected travel volumes:

MONTH	ANTICIPATED ARRIVAL LOSSES*	ESTIMATED NUMBER OF ARRIVALS AND TESTS	MONTHLY COST (\$20 AN UNIT)
MAY - 20	- 79%	79,924	\$1,598,478
JUN - 20	- 76%	107,830	\$2,156,597
JUL - 20	- 70%	144,880	\$2,897,604
AUG - 20	- 65%	141,036	\$2,820,720
SEP - 20	- 55%	124,716	\$2,494,323
OCT - 20	- 50%	163,653	\$3,273,060
NOV - 20	- 43%	222,835	\$4,456,705
DEC - 20	- 35%	317,259	\$6,345,170
JAN - 21	- 25%	298,427	\$5,968,530
FEB - 21	- 18%	281,454	\$5,629,070
MAR - 21	- 15%	348,752	\$6,975,049
APR - 21	- 14%	315,408	\$6,308,169
TOTAL	-	2,546,174	\$50,923,475

*Tourism Economics, COVID-19 Scenario Losses: Demand

Testing Options

Currently there are a growing number of viable molecular PCR options in the market including several rapid tests²⁰. A particularly promising development is the non-invasive, saliva-based molecular test created by Rutgers University. This approach would allow passengers to simply “spit in a cup and put the cover on” without requiring medical personnel to introduce a swab into to the nose or throat of or otherwise have

direct contact with the person being tested. These options provide the capability to detect COVID-19 in arriving passengers including both asymptomatic and resolved cases with immunity:

- Abbott: Swab-based Rapid PCR can provide results in 5 – 13 minutes
- Mesa Biotech: Swab-based Rapid PCR results in as little as 30 minutes

²⁰<https://skift.com/2020/05/03/vienna-airport-to-offer-200-coronavirus-tests-to-bypass-quarantines/>

²¹Tourism Economics: Economic impact of visitor spending in Puerto Rico, May 2019



- Cepheid: Swab-based Rapid PCR results in as little as 45 minutes
- Roche COBAS: Swab-based Reference lab PCR high volume testing: Results 3.5 hours
- Rutgers: Saliva-based Lab PCR testing: Just going into production - Results in hours.
- <https://www.politico.com/states/new-jersey/story/2020/04/23/rutgers-saliva-based-covid-test-could-be-key-to-unlocking-new-jerseys-economy-1279421>

Below we will address more recommendations of what process should be followed with visitors that test positive.

Contact Tracing

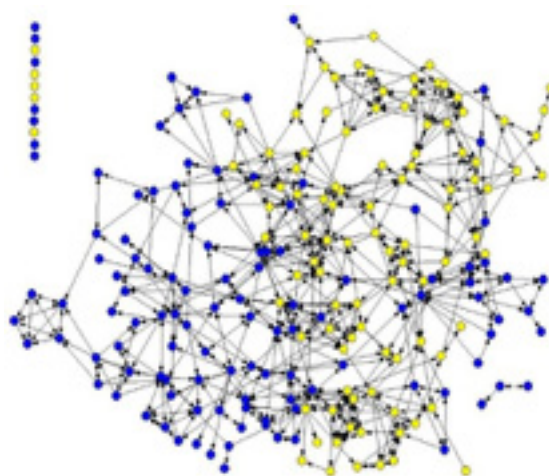
The Puerto Rico Biological Border at the Luis Muñoz Marín International (LMM) Airport requires the implementation of a robust contact tracing program enabled by case management and proximity tracking technologies. As stated by the Centers for Disease Control and Prevention (CDC), contact tracing is only part of, albeit a very important part of, a multi-pronged approach to fight the COVID-19 pandemic and enable a return to necessary economic activity. A successful contact tracing strategy must work in tandem with widely available diagnostic tests. It both presupposes, and protects, sufficient capacity in our health care delivery systems, including appropriate availability of Intensive Care Unit (ICU) beds and ventilators.

Contact tracing, as part of the documented test-trace-isolate strategy, is the mechanism of identifying contacts of a positively diagnosed patient to limit the transmission rate of the virus by isolating those at risk. Accurate contact tracing requires identifying all possible effective contacts the

patient, referred to as the index case, may have had during the period he or she was infectious. To obtain a full picture of the potential spread of the contagion, a public health worker or contract tracer must first determine the patient's window of possible infectiousness (or incubation period) and assist them in the process of listing their contacts, be it family, friends, co-workers, or community members, that may have had a prolonged exposure to the virus while in the patient's presence.

These contacts must be located and informed of their potential exposure and the risks of the disease. They must also be encouraged to self-isolate or quarantine for the estimated duration of the disease's incubation period and, if infected, the recovery time. In the case of COVID-19, the incubation period has ranged from two to fourteen days and the recovery time is up to two weeks for mild cases and three to six weeks for patients with severe or critical cases.

The result of this contact tracing exercise is a map of the index case's network of contacts that can serve as a visual representation of the complexity of potential transmission. An example of such a network developed by the Keck School of Medicine of the University of Southern California is included in Figure 1.





There are multiple technology-enabled contact tracing systems that have been implemented around the world including Singapore, South Korea, Israel, and Germany. They can manage larger numbers of contacts automatically including the identification of inadvertent contacts through historical proximity of mobile devices as well as the tracking and enforcement of mandated quarantines using geofencing and other location-enabled methods, such as Blue Tooth Low Energy (BLE) or GPS. Some of these systems have been designed to generate alerts while maintaining individual privacy of patients. While these systems do not eliminate the need for significant numbers of personnel to support manual contact tracing, they increase the efficiency of that work while providing capabilities that simply cannot be replicated manually.

Data and Transparency

For this Biological Border implementation to be successful, we need the ability to capture data on all phases of the process and make it accessible to the public. Daily reporting of key metrics is essential to build trust and to make strategic and operational decisions. Some of the metrics may include:

- a. Screening & Testing: number of passengers arriving, number of passengers tested (%), number of positive and negative cases, and passengers transported to quarantine facilities or medical facilities.
- b. Contact Tracing: number of passengers under contact tracing protocol; number of days/hours after first contact or referral; average time from referral to instructing a contact to isolate; contact success ratio; contact tracing staff capacity assessment; and transmission rate.
- c. Quarantine & Health Care: number of passengers in quarantine locations; type of quarantine location and its occupancy, number of passengers in health care facilities and their capacity, number of passengers who have successfully completed their quarantine and number of passengers that have been tested after quarantine and their results.
- d. Safety & Hygiene Protocols: protocol audit reports, starting on a weekly basis by facility; identification of facilities with suspected COVID-19 cases.

The number of tests, their results, and which step of the process a case is undergoing is information necessary to measure, monitor, and improve the model. Sample questions that we can answer with this data are: How many patients were taken into a medical facility or a quarantine facility? Did they comply with their quarantine and no longer have symptoms? This information will allow the public to have high confidence in the model, for patients to be taken care of adequately, and for workers' performance to be documented. This information can rest in a centralized COVID-19 case management database.





Testing and contact tracing logistics: Test, trace, and isolate

Once arriving passengers' testing samples are drawn, their contact information is collected, and they are registered in the appropriate proximity tracking tool, asymptomatic passengers could be allowed to leave the airport prior to the availability of testing results. This would allow the relatively unimpeded flow of passenger arrivals. Ideally, the future visitor would have agreed in advance, probably at the time when booking airline or lodging arrangements, to conditions such as abiding by local law and regulations and, in the event of a positive test, being responsive to and compliant with public health requirements.

All passengers should be reminded of sanitary and hygienic practices and social distancing guidelines at the time of the public health interview. Travelers should also be reminded they could potentially have been exposed in the airplane or airport, for example, by sitting next to someone who has tested positive or if a member of their travel group

were infected and subsequently tested positive. They should be prepared to be contacted if such a situation were to arise.

The potential minority of symptomatic passengers would need to remain in the designated holding area with appropriate protections until test results are available. Passengers who refuse testing will be considered COVID-19 positive. These individuals should be allowed to return to their point of origin, or they will be treated as a positive case and quarantined.

Symptomatic cases, depending on the severity of the symptoms, may potentially need medical attention and should be assisted in gaining access to suitable medical services and/or be taken to a healthcare facility.

Airport Logistics and Passenger Flow – Enhancing the Current Bio Border Model

Foundation for Puerto Rico recommends that the Bio Border Model be one where travelers will be required to get tested previous to arriving to the island or get tested once they arrive.



As the airports that originate passenger develop capabilities or implement federally mandated requirements, an increasing number of passengers will arrive that have already been tested. Passengers that upon arrival are able to provide suitable proof of a recent negative test (within 2 days before travel) or, when such documents gain validity, a certificate of immunity, or were pre-tested at a point of departure, will not need to go through the SJU testing process. They will only need to provide their information to the contact tracing team to track if they come into future proximity with a COVID-19 positive patient.

The airport needs to coordinate with airlines and TSA to ensure they effectively communicate to passengers, even before they arrive to the island, that they will have such requirements. In addition, the airport needs to ensure proper signage of the new screening practices for passengers to see when they arrive at the airport, as well as airline and intercom announcements. These signs need to support the adequate process of redirected passengers to the testing area. This effort is already on its way at the LMM Airport because a significant implementation of the Biological Border is already in place.

While, generally, LMM shall review how to accommodate space for social and physical distance with the available space in all areas, as they go through the necessary screening processes, these spaces must be both secure and sufficiently adjacent to arrival flows so as not to impede efficient operations. All health and safety protocols should be in place - for example, adequate queueing space to allow 6 ft of distance between passengers.

Arriving passengers at LMM currently are triaged for visible fever symptoms via infrared video camera technology and those flagged are further screened with a non-contact thermometer. Anyone with a fever, or other symptoms of illness, should be directed to an appropriately protected designated area and undergo the screening process separately from asymptomatic passengers and be tested with priority, and held within the designated area to avoid infecting other travelers. They should be required to use face masks and hand sanitizers as they may not be COVID-19 infected but could be exposed to others within that designated area.

Before, during or after testing, passengers need to provide their contact information to the contact tracing team. This step is already being implemented on a manual basis at LMM. The information needs to be entered into a contact tracing system. Ideally, airline systems should provide basic passenger information to the contact tracing case management system to ensure every arriving passenger is accounted for. The system will then index each individual case, and from that point on, the contact tracing team will be able to track it. All arriving passengers should be required to install the required proximity tracking app in their phones. The proximity tracking app could be embedded in a comprehensive personal emergency response app, that could offer 7x24 health contact center support, and could be use also for any other kind of emergencies, during the stay. For people who are unable to download the app, phone numbers, personal email addresses or the contact information of the place where the visitor will stay, could also be used as alternatives. comprehensive personal emergency response app, that could offer 7x 24 health contact center support, and

²² Puerto Rico State Law Num 81 of March 14, 1912, Article 4



could be use also for any other kind of emergencies, during the stay. For people who are unable to download the app, phone numbers, personal email addresses or the contact information of the place where the visitor will stay, could also be used as alternatives.

This would permit the public health system to contact them when necessary. For example, if a passenger was tested with a positive result or if subsequently during the visit to Puerto Rico, the automated contact tracing system detected that the individual had been in proximity with someone who was infected or provide any information on how they can be contacted. This could allow notification of passengers on the same flight of their potential exposure according to criteria of seating proximity. Once the testing results are in, the contact tracing system will notify the case to the Puerto Rico Health Department and, potentially, the equivalent health authority of the traveler's point of origin.

Positive case

Visitors whose testing yields a positive result at the airport will be in contact with a healthcare worker, an epidemiologist or a professional trained in contact tracing, to obtain additional information in order to ascertain when the person contracted the virus, its estimated incubation period and who have they been in contact with. The health care professional will have the responsibility to educate the patient on any symptoms, identify any risk factors and inform him of the health care options available. Those who test positive and who are asymptomatic or show mild symptoms will be given the opportunity to decide if they are going to adhere to quarantine measures or otherwise shall be required return to their point of origin taking all the CDC recommended

measurements. Those that are ill will need coordination to direct them to local medical attention or hospitalization. TSA guidance already says that those who tested positive shall seek medical attention and follow the guidance of their healthcare provider and local health department.

As new test come up with more immediate results, the government will have to quarantine all positive cases or cases of visitors that refuse to take the test. Article 4 of Law 81 states that “the Secretary of Health may order the transfer to the sites to be determined appropriate, to those who suffers from a quarantinable disease or any other rapid, contagious or infectious disease, and will be responsible for public hospitals for the treatment of such cases.”

The government needs to ensure that there is suitable infrastructure in place to quarantine and otherwise manage positive cases. They could assign one of the closed hotels to become the official location for visitors to quarantine until a vaccine is available. This location needs to have the right medical and police infrastructure to ensure people are abiding by the protocols while they have any medical support necessary. Positive cases will need appropriate transportation, health services, on-island accommodation options or, where the situation requires it, to be given access to air transportation arrangements to leave the island earlier than expected.

The workers that provide services to potentially contagious individuals need specialized capabilities including training and physical protection. Visitor-related businesses as hotels, short term rental hosts,

²³ <https://www.tsa.gov/coronavirus>



tour operators, etc., must all be suitably prepared. Arrangements should in place with airlines to deal with people who test positive and choose to return home.

Quarantine facilities

Puerto Rico must identify, contract with, and prepare one or more hotel facilities to host visitors who test positive but are otherwise healthy. Positive cases that do not need medical attention can still enjoy their stay at our island while being socially isolated from the rest of the population. The facility must be under medical surveillance for all employees, initiating with testing before opening, and daily check up by automatic monitoring. This will provide more trust with the facility and the overall tourism experience. The hotel staff should be trained and provided with the necessary tools to avoid infection. Hotel guest activities need to be appropriately controlled, potentially with the support of the PR National Guard, and their symptoms need to be monitored. Patients whose symptoms worsen need to be transported to a pre-designated health care facility.

Legal framework and Federal regulatory requirements

On April 9, 2020 the Secretary of Justice of Puerto Rico provided a legal opinion per the request of the head of the National Guard of PR (OL 2020-04-09), on whether the Department of Health has the authority to test passengers that arrive to the island. The legal opinion concluded that the Secretary of Health does have the authority to do blood test in a mandatory

form, despite being a registry, ensuring it is carry out in accordance with protocols duly authorized by the Secretary of Health and if such a measure constitutes a procedure accepted by the scientific community to address the spread of COVID-19.

In addition, the Supreme Court of Puerto Rico recognizes great breadth to the faculty of the state and emphasizes that the concept of freedom and individual rights are not absolute and have sometimes considered greater hierarchy and importance: common well-being. Having said that, in order to justify the exercise of state power of reason, it is necessary to adopt measures that are scientifically grounded or supported.

Puerto Rico State Law Num 81 of March 14, 1912, known as the Organic Law of the Department of Health establishes that in the case a pandemic threatens the health of the population, “the PR Department of Health will take the measures it judges necessary to fight it and, with the approval of the Governor, incur in any expenses necessary by the state Government”.

Public Education Campaign

On the other hand, there needs to be a high public confidence on this model. Various surveys conducted by Discover Puerto Rico and other organizations, show that when people can travel again they will be looking for places to travel that are safe and one that is implementing strong measurements of containing the spread of the virus. Puerto Ricans and visitors need to be made aware of and educated about the scope of the protections that the Destination Biological Border



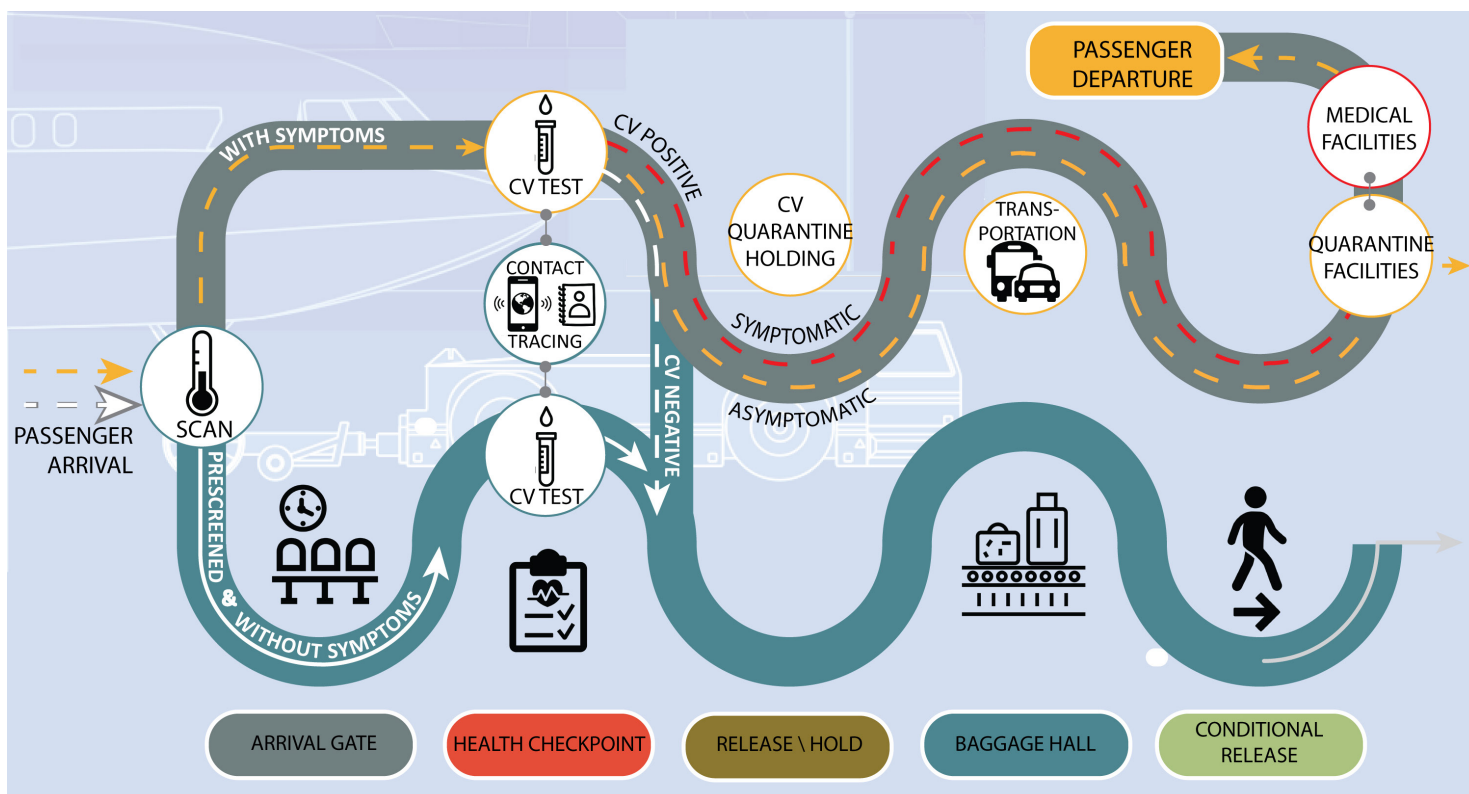
Model encompasses and how it will enhance public safety and create a great opportunity for an early and robust economic recovery for the island. This will allow marketing organizations like Discover Puerto Rico to promote our island as a safe destination to visit.

Conclusion

The probability of positive impact of these strategies increases the sooner they are implemented. The health and safety of Puerto Rico’s residents depends on a science-based, integrated response to the entry of positive cases in the island. This response must be anchored by proactive testing of travelers as they enter Puerto Rico and complemented by a robust contact-tracing program that will ensure that any positive cases and their movements are known by local health authorities.

The Bio-Border presents an opportunity to prevent positive cases from risking the health of Puerto Rico’s residents and helps reduce the strain on the local healthcare network. While the investment may be considered substantial in terms of logistics and expense, this investment is appropriate and urgent. The residents of the Island have undergone a longer lockdown than any other US jurisdiction to control spread – this effort should not be squandered by allowing non-identified positive cases to impact the community. Especially as those most at risk are already the most vulnerable workers in our economy.

By enacting the contact tracing program, those who have been at risk will be better able to make informed decisions for themselves and their families. This program will allow local health officials to quickly





identify potential infection clusters, so they can act to contain any further spread. By establishing containment protocols, travelers and residents will be assured of their health and safety and Puerto Rico’s commitment to such.

This concerted effort to safeguard Puerto Rico’s health and economy brings together government and the

private sector in a coordinated, responsible course of action. FPR’s proposed solution, creating a Bio-Border at our point of entry will substantially reduce the possibility of contagion for the population, but time is of the essence. Puerto Rico should act now, and should act decisively to maximize the benefit to society from the proposed testing and contact tracing approach.

