

REIMAGINA Puerto Rico

Resilient Puerto Rico Advisory Commission



HEALTH, EDUCATION & SOCIAL SERVICES

SECTOR REPORT

RESILIENT PUERTO RICO ADVISORY COMMISSION

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Acronyms

100 RC 100 Resilient Cities

ACA Affordable Care Act

ACS American Community Survey

ADUs Accessory Dwelling Units

AES Agricultural Extension Service

AGC Associated General Contractors of America

AIDIS Inter-American Association of Sanitary and Environmental Engineering

AMA, by its Spanish acronym Puerto Rico Metropolitan Bus Authority

ARRA American Recovery and Reinvestment Act

ASSMCA, by its Spanish acronym Puerto Rico Administration of Mental Health and Anti-Addiction

BLS United States Bureau of Labor Statistics

BTOP Broadband Technology Opportunities Program

Business PREP Business Preparedness and Resiliency Program

CAAPPR, by its Spanish acronym Puerto Rico College of Architects and Landscape Architects

CAGR Compound Annual Growth Rate

CAIDI Customer Average Interruption Duration Index

CBA Community Benefits Agreements **COOP** Continuity of Operations Plan **CBO** Community-Based Organizations **COR3** Puerto Rico Central Office of Recovery, Reconstruction, and Resilience **CCLC** United States Department of Education - 21st Century Community Learning Centers **CRA** Community Reinvestment Act **CDBG** Community Development Block Grant **CRF** City Resilience Framework **CDBG-DR** Community Development Block Grant CRIM, by its Spanish acronym Puerto Rico Municipal Disaster Recovery Revenue Collection Center **CDBs** Community Development Banks **CSR** Corporate Social Responsibility **CDC** Center for Disease Control and Prevention **DACO**, by its Spanish acronym Puerto Rico Office of Consumer Affairs **CDCorps** Community Development Corporations **DEDC** Puerto Rico Department of Economic **CDFIs** Community Development Financial Institutions Development and Commerce **CED** Community Economic Development **DHS** United States Department of Homeland Security **CHDOs** Community Housing Development Organizations **DIRS** Disaster Information Reporting System **CHIP** Children's Health Insurance Program **DIY** Do It Yourself **CHP** Combined Heat Power **DNER** Puerto Rico Department of Natural and Environmental Resources **CIAPR** Puerto Rico College of Engineers and Land Surveyors **DOLHR** Puerto Rico Department of Labor and Human Resources **CNE** Center for a New Economy **DOS** United States Department of State COFECC, by its Spanish acronym Corporation for

Public Works

DTPW Puerto Rico Department of Transportation and

Business Financing of Commerce and Communities (now

known as "lendreamers")

EDA United States Economic Development Administration	HMGP FEMA Hazard Mitigation Grant Program	
EOP Puerto Rico Emergency Operation Plan	HMP Puerto Rico Hazard Mitigation Plan	
EPA United States Environmental Protection Agency	HRSA United States Health Resources and Services Administration	
EQB Puerto Rico Environmental Quality Board	HUD United States Department of Housing and Urban Development	
EQIP Environmental Quality Incentives Program	INE L. C. A. N P L.	
EWP-FPE Emergency Watershed Protection - Floodplain Easement Program	INE Instituto Nueva Escuela IoT Internet of Things	
FAA Federal Aviation Administration	IRP Integrated Resource Plan	
FCC Federal Communications Commission	IRS Internal Revenue Service	
FEMA Federal Emergency Management Agency	ISWM Integrated Solid Waste Management	
FHWA Federal Highway Administration	KPIs Key Performance Indicators	
FIDEVI, by its Spanish acronym Puerto Rico Housing and Human Development Fund	KW Kilowatt	
FIRM Flood Insurance Rate Maps	LIHTC Low-Income Housing Tax Credits	
-	LISC Local Initiatives Support Corporation	
FOMB Financial Oversight and Management Board for Puerto Rico	LMI Low to Moderate Income	
FQHCs Federally Qualified Health Centers	LO Location Quotient	
FTA Federal Transit Administration	MA Medicare Advantage	
GAR Governor's Authorized Representative	MBA Mortgage Bankers Association of Puerto Rico	
GIS Geographic Information System	MCOs Managed Care Organizations	
HHS United States Department of Health and Human Services	MGD Million Gallons Per Day	
	MIT Massachusetts Institute of Technology	
HiAP Health in All Policies	MSA Metropolitan Statistical Area	
HIPAA Health Insurance Portability and Accountability Act	MUSV Movimiento Una Sola Voz	

NAICS North American Industry Classification System	PICA, by its Spanish acronym Four Year Investment Program	
NDRF National Disaster Recovery Framework		
NERC North American Electric Reliability Corporation	PMO Puerto Rico Permits Management Office	
NFIP National Flood Insurance Program	PPA Power Purchase Agreement	
NGOs Non-governmental Organizations	PR Science Trust Puerto Rico Science, Technology & Research Trust	
NIH National Institutes of Health	PRASA Puerto Rico Aqueduct and Sewer Authority	
NOAA National Oceanic and Atmospheric Administration	PRBA Puerto Rico Bankers Association	
NRCS Natural Resources Conservation Service	PRBC Puerto Rico Building Code	
NTIA National Telecommunications and Information Administration	PRCC Puerto Rico Chamber of Commerce	
	PRDA Puerto Rico Department of Agriculture	
O&M Operations and Maintenance	PRDE Puerto Rico Department of Education	
OCIO Office of the Chief Information Officer of Puerto Rico	PRDF Puerto Rico Department of the Family	
OCPR Office of the Comptroller of Puerto Rico	PRDHe Puerto Rico Department of Health	
OCS, by its Spanish acronym Office of the Commissioner of Insurance of Puerto Rico	PRDHo Puerto Rico Department of Housing	
ODSEC, by its Spanish acronym Office for the	PRDOJ Puerto Rico Department of Justice	
Community and Socioeconomic Development of Puerto Rico	PRDPS Puerto Rico Department of Public Safety	
	PREC Puerto Rico Energy Commission	
OMB Puerto Rico Office of Management and Budget	PREMA Puerto Rico Emergency Management Agency	
OPPEA, by its Spanish acronym Puerto Rico Governor's Office for Elderly Affairs	PREPA Puerto Rico Electric Power Authority	
OSTDS Onsite Sewage Treatment and Disposal Systems	PRFN Puerto Rico Funders Network	
P3 Public-Private Partnership	PRHBA Puerto Rico Home Builders Association	
PACE Property Assessed Clean Energy	PRHFA Puerto Rico Housing Finance Authority	
PDM FEMA Pre-Disaster Mitigation Grant Program		

PRHIA Puerto Rico Health Insurance Administration	SSI Supplemental Security Income
PRHTA Puerto Rico Highways and Transportation Authority	SWMA Puerto Rico Solid Waste Management Authority
PRIDCO Puerto Rico Industrial Development Company	TIP Transportation Improvement Program
PRIFA Puerto Rico Infrastructure Finance Authority	TRB Puerto Rico Telecommunications Regulatory Board
PRITA Puerto Rico Integrated Transit Authority	U.S. Army United States Department of the Army
PRMA Puerto Rico Manufacturers Association	UPR University of Puerto Rico
PRPA Puerto Rico Ports Authority	URA Puerto Rico United Retailers Association
PRPB Puerto Rico Planning Board	USAC Universal Service Administrative Company
PRPBA Puerto Rico Public Buildings Authority	USACE United States Army Corps of Engineers
PRPS Puerto Rican Planning Society	USDA United States Department of Agriculture
PRTC Puerto Rico Tourism Company	USDOC United States Department of Commerce
PRTD Puerto Rico Treasury Department	USDOED United States Department of Education
PRTEC Puerto Rico Trade and Export Company	USDOL United States Department of Labor
PSHSB Public Safety and Homeland Security Bureau	USDOT United States Department of Transportation
QCEW Quarterly Census of Employment and Ways	USF Universal Service Fund
RFP Request for Proposal	USFS United States Forest Service
RISE Resiliency Innovations for a Stronger Economy	USFWS United States Fish and Wildlife Service
RPS Renewable Portfolio Standard	USGS United States Geological Survey
SAIDI System Average Interruption Duration Index	WIOA Workforce Innovation and Opportunity Act
SAIFI System Average Interruption Frequency Index	WPSs Water Pump Stations
SBA Small Business Administration	WTPs Water Treatment Plants
SMEs Small and Mid size Enterprises	WWPSs Wastewater Pump Stations
SOPs Standard Operating Procedures	WWTPs Wastewater Treatment Plants



D1 BACKGROUND



Puerto Rico Background

Hurricanes Irma and María impacted Puerto Rico on September 2017 and caused nearly complete devastation to the Island. On September 6th, Hurricane Irma, a category five storm, skirted the northern part of the Island, causing significant flooding and leaving more than 1 million people without electric power. Two weeks later, on September 20th, Hurricane María, the tenth most intense Atlantic hurricane on record, passed east-to-west across the whole Island. Hurricane María left the entire Island without electricity, and it damaged thousands of housing units, as well as telecommunication towers, roads, bridges, schools, and 80% of the Island's crop value. Furthermore, Hurricane María impacted the physical structure of all hospitals and health clinics, affected 70% of Puerto Rico's potable water treatment and distribution system, and caused immense suffering to all Puerto Ricans. The Government of Puerto Rico's damage assessment estimated that the Island would need \$94.4 billion to fully recover¹. The National Oceanic and Atmospheric Administration estimates the damage from María makes it the third costliest hurricane in U.S. history, behind Katrina (2005) and Harvey (2017)².

The severity of the impacts highlighted the Island's physical and natural infrastructure vulnerability to extreme weather events and the need to better prepare for future events. The hurricanes also exposed structural socioeconomic weaknesses that existed prior to the storms and that exacerbated their impacts, among them a contracting economy, a bankrupt public sector, declining jobs, high inequality, aging infrastructure, and continuous population loss.

The combination of these physical, natural, and socioeconomic factors tested Puerto Rico's resilience. Resilience is understood as the capacity to respond, survive, adapt, and grow in response to shocks and stresses. Shocks are major crisis events that disrupt the normal operation of communities, as well as their institutions and systems. On the other hand, stresses are chronic conditions that progressively reduce the ability of individuals, businesses, institutions, and systems to function effectively.

Hurricanes Irma and María, however, were only the latest of a series of significant events that have severely affected Puerto Rico over the last decade. The Island has faced multiple environmental and socioeconomic shocks that have tested its capacity and eroded its ability to respond resiliently in the past. Tropical cyclones, floods, and wildfires have been common occurrences in the Island's territory of roughly 9,000 square kilometers.

Also, Puerto Rico's economy has been suffering a staggering contraction for over ten years. The outward migration has resulted in a decrease in population of nearly 388,000 residents, or 10%, from April 2010 to July 2017³. Changing demographic patterns have resulted in reductions in the Island's overall population, and in an increase in the elderly and the islanders

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living below poverty levels. Over 41% of Puerto Rico's inhabitants are living below the U.S. federal poverty line, proportionally more than triple the U.S. average (11%)⁵. Puerto Rico's GINI coefficient, an indicator that denotes income inequalities across populations, is the highest in the United States⁶.

Moreover, in May 2017, a fiscal crisis that developed over decades spurred a bankruptcy declaration by the Government of Puerto Rico and several of its public corporations. The bankruptcy declaration prompted a process to restructure Puerto Rico's debt obligations, placing additional challenges on its public sector operations and services. As such, any recovery measures that require changes to the budget of Puerto Rico government agencies (from either the revenue or expenditures), could be subject to additional restrictions by the U.S. Federal Court and the Financial Oversight and Management Board for Puerto Rico. All these factors constitute stresses affecting Puerto Rico, and they create additional challenges to the overall

management of local government agencies and their policy implementation processes.

Even in the midst of all this turmoil, Puerto Ricans are clear on one thing: The path forward is not to return the Island to its prior state, normality is not the goal. The story of the new Puerto Rico is yet to be written. The Island must use this catastrophe to leverage the investments that will be made to change its growth and development trajectory. The recovery process should not focus salely on replacing outdated infrastructure. Instead, it should aim at building better assets, unleashing innovation, and coordinating among interested stakeholders. By creating these conditions, the path to address multiple challenges, increase social cohesion, strengthen the economy, and eliminate existing underlying socioeconomic weaknesses will be paved. Only then, Puerto Rico will be a better place for its citizens. This is the vision of the Resilient Puerto Rico Advisory Commission and its core project, ReImagina Puerto Rico.

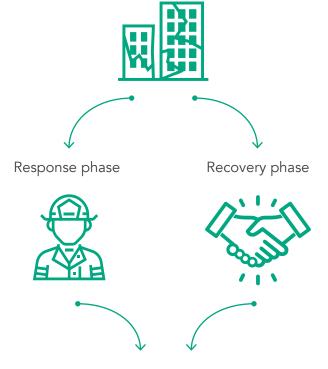
About the Resilient Puerto Rico Advisory Commission

The Resilient Puerto Rico Advisory Commission (the "Commission") was created in November 2017 as an independent, inclusive, non-partisan and, nongovernmental, body led by Puerto Ricans. It is designed to serve as a unifying force among a diverse group of voices.

The Commission is chaired by five Co-Chairs and has 22 Commissioners. The Co-Chairs are leaders from Puerto Rican civil society that represent diverse interests and social sectors. They were selected in consultation with local groups to lead the effort and evaluate, endorse, and approve the overarching recommendations of the Commission's reports. Commissioners are civic, community, and business leaders appointed by the Co-Chairs, and they represent a broad cross-section of NGOs and academic, civic, and professional communities in Puerto Rico. They are the project's ambassadors, an integral part of the community engagement, and have contributed their knowledge and technical expertise to the development of this report's recommendations.

The Commission's goal is to promote a more resilient Puerto Rico as part of a long-term reconstruction process that improves Puerto Ricans' quality of life. It envisions a more participatory and transparent recovery process where the people of Puerto Rico take an active role in forging the future of the Island.

Post-disaster efforts



Local NGOs and philanthropic organizations envision the long-term resilience of Puerto Rico



The Resilient Puerto Rico Advisory Commission emerged as a response to support initiatives that help move Puerto Rico's recovery and reconstruction efforts in a resilient manner.











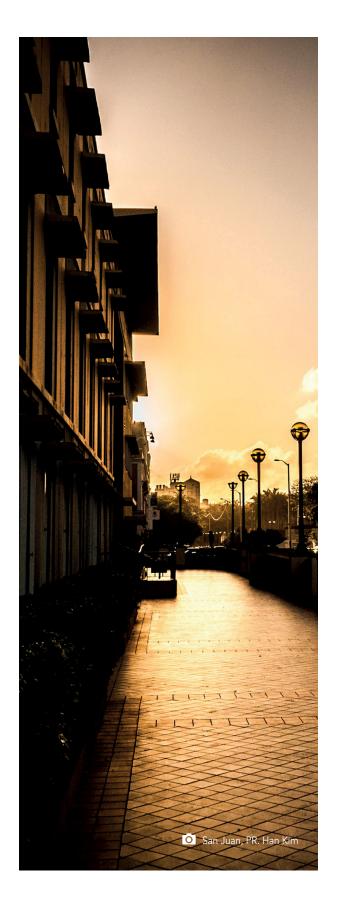


The Commission receives no public funding. It is financially supported entirely by Ford Foundation, Open Society Foundations, and The Rockefeller **Foundation**, with technical support from The Rockefeller Foundation's 100 Resilient Cities, as part of a broad effort to support the resilient recovery of Puerto Rico.

The Commission's core project, ReImagina Puerto Rico, aims to:



Produce an actionable and timely set of recommendations for how to use philanthropic, local government, and federal recovery funds to help rebuild **Puerto Rico in a way** that makes the Island stronger -physically, economically, and socially- and better prepared to confront future challenges.













DEVELOPMENT



INFRASTRUCTURE

The Commission embarked on a broad, participatory process to achieve this objective, and it focused its analysis on several key sectors, organized under six working groups (see Figure 2).

Working groups met on three different occasions with approximately 15-20 individuals per working group meeting. They included commissioners and other experts and stakeholders with knowledge and expertise within the scope of the working groups. The three working group sessions led to the identification and development of each sector's goal and sector-specific recovery recommendations for Puerto Rico's resilient rebuild (see Methodological Approach on Appendix). Technical discussions within working group meetings were also nourished through a Community Outreach and Engagement Process that was held across Puerto Rican communities to validate and strengthen the identification of unmet needs, sector goals, and recovery actions.

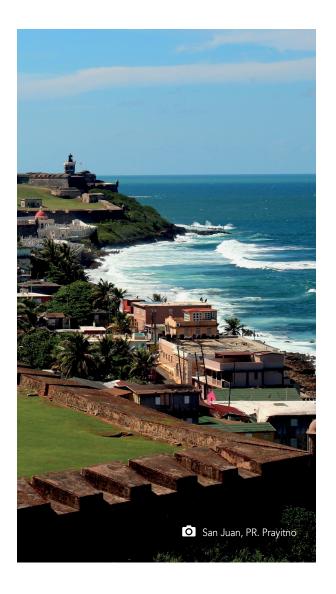
One of the core distinctions of this effort lies

in the broad and participatory outreach approach it has adopted towards Puerto Rico's recovery and reconstruction. The Commission has placed a central focus on enabling a conversation among diverse voices to build consensus and identify opportunities to embed resilience in the rebuilding efforts. As part of the project's Community Outreach and Engagement Process, ReImagina Puerto Rico brought together community members and leaders, grassroots organizations, business leaders, government officials, representatives from professional organizations, and students, among other groups. ReImagina Puerto Rico interacted with more than 750 individuals throughout the engagement process, including representatives from the Puerto Rican diaspora in Central Florida. Furthermore, it provided a common platform to discuss concerns and aspirations regarding a more resilient Puerto Rico. The extensive input gathered throughout this outreach process strongly shaped the development of the recommendations described in this report.

Finding the **Path Forward**

The Commission's primary focus was to develop recommended actions with resilience qualities such as being inclusive, integrated, flexible, redundant, reflective, resourceful, and robust and targeting issues of equity, transparency, and sustainability. The process of rebuilding Puerto Rico offers the opportunity to address some of the underlying challenges that have prevented Puerto Rico from overcoming most recent disasters.

Building resilience requires looking at a community holistically and understanding the systems that make up the place, as well as the interdependencies and risks, through precise identification of existing and potential shocks and stresses. Beyond continuing to build its capacity for resilience, Puerto Rico needs to take advantage of the current moment to embark on a unified planning exercise that emanates from a series of consultations and debates with numerous stakeholders and at multiple scales. Such a planning exercise can help strengthen Puerto Rico's social fabric, as well as help devise and design a more precise set of projects and programs that can improve its development trajectory and the wellbeing of its citizens. To help jumpstart the required planning efforts, ReImagina Puerto Rico has put forth specific and actionable recommendations that comprehensively, and in a coordinated manner, address unmet needs, ongoing challenges, and mitigate the impact of future disasters.



Working Group Mission and Approach

The Health, Education & Social Services Working Group served as an advisory group to the Commission to provide technical guidance for the development of actionable and timely recommendations related to rebuilding relevant facilities and systems, impacted by Hurricane María, in a manner that makes them better able to withstand future challenges. The group also sought to further strengthen long-term resilience by addressing social equity and equality, transparency, use of data and technology, and the environmental and social determinants of health, education and social services in Puerto Rico. The working group consisted of local technical experts and individuals with relevant experience and expertise.

Working group members recognized that the Island's health, education, and social service delivery systems were stressed pre-hurricane in part due to Puerto Rico's economic instability, high poverty rates, growing class segregation, outmigration, environmental stresses, and aging of the population. Members also provided many examples of Puerto Rican individuals, organizations, and communities that consistently and effectively serve their communities, work to solve urgent and chronic problems, and are contributing toward a stronger and more resilient future.

Working group members viewed the hurricane recovery process as a way to further cultivate existing successes as well as to make progress towards addressing longstanding problems. The working

group identified unmet needs and further categorized them, as shown in the following page. These are described in more detail in Section II (see page 32).

In responding to these unmet needs, the working group developed a wide range of actions that achieve multiple benefits while building capacity to face and recover from acute shocks and chronic stresses. Working group members felt strongly that the infusion of funds for hurricane recovery represents an opportunity to address urgent as well as structural issues. The recommended actions also reflect a recognition that building resilience in the health, education, and social services sectors require a holistic approach.

Note that working group members expressed a deep concern for systematic issues such as public distrust, mismanagement, credibility, availability of data, transparency of decision-making, timeliness of information, social segregation and inequality and government accountability that all sectors should address in an integrated manner. These aforementiones issues affect all sectors, not only Health, Eduation & Social Services. The integration of information and development of crosscutting actions would lead not only to providing accountability mechanisms but could also result in more efficient systems that could potentially increase the tax base, improve quality of services offered, and optimize the allocation of resources.

The Health, Education & Social Services Working Group served as an advisory group to the Commission to provide technical guidance for the development of actionable and timely recommendations related to rebuilding relevant facilities and systems, impacted by Hurricane María, in a manner that makes them better able to withstand future challenges.



Pre-Disaster Context

Prior to Hurricane María, the health, education, and social service systems were already stressed due to Puerto Rico's economic instability, debt and pension obligations, high poverty rates, outmigration, the aging of the population, and a high occurrence of chronic diseases (e.g., diabetes, heart problems, high blood pressure) See figure 3. The education system also faced pre-hurricane issues related to Puerto Rico's continuing outmigration, growing class segregation, and fiscal crisis. Critical areas of concern, pre-dating the hurricanes, included:

Schools

Even though Puerto Rico's public schools were going through the fiscal crisis before Hurricane María, these were fundamental to the emergency management in many municipalities. The government was closing public schools as a cost-cutting measure, which critics believe to be contributing to the continuing outmigration of teachers, students, and their families⁸. School closures in rural areas were particularly impactful due to lack of transportation for students to travel to other schools. Teachers were relocated based on seniority⁹. Puerto Rico's public schools are more segregated from a socioeconomic perspective than the Island as a whole. Puerto Rico's Department of Education reports that 77 percent of children come from homes below the poverty line¹⁰ and 58% of Puerto Rican children live in poverty¹¹.















Pedagogical deficiencies

The pedagogic model fostered by the public-school system does not take into consideration the knowledge on human development, tendencies, and sensitivity. Curricula have been directed towards improving standardized testing passing rate, and not necessarily addressing our youth's developmental stages. Specifically, children in early stages (0-6 yrs) lack attention and must be reinforced. Also, the measurement of academic/proficiency results generated from standardized testing has "little if any effect on student progress and, in some instances, counterproductive outcomes¹²."

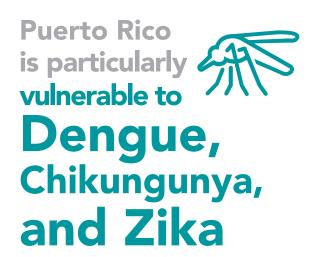
Chronic diseases

Puerto Rico suffers from a high rate of chronic diseases. The incidence of diabetes, heart disease, HIV diagnosis rate, and infant mortality are all higher than in the 50 states and DC¹³. Asthma is also prevalent, and obesity rates in Puerto Rican adults are similar to those in the highest of the 50 states. Primary causes of death, including cancer, heart diseases, diabetes, Alzheimer's, and cerebrovascular diseases, reflect the aging population¹⁴.

The incidence of diabetes, heart disease, HIV diagnosis rate, and infant mortality are all higher than in the 50 states and D.C.

Vector- and water-borne diseases

Puerto Rico's tropical climate makes it particularly vulnerable to vector-borne diseases such as Dengue, Chikungunya, and Zika. Vector-borne diseases pose a public health and financial challenge —according to the Centers for Disease Control and Prevention (CDC), the dollar amount of caring for a single child with congenital disabilities is estimated to be in the millions¹⁵. Also, dengue is endemic, and the chikungunya virus disease is locally transmitted¹⁶.

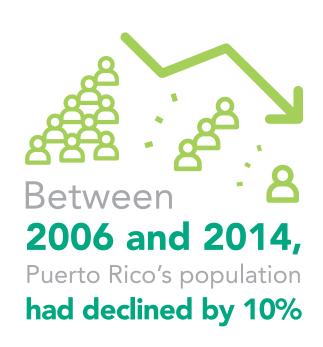




Outmigration

Between 2006 and 2014, Puerto Rico's population had declined by ten percent. Young people represent a disproportionate share of those who have migrated, with a 25% drop in the number of people between the ages of 0-14 and a 15% drop in those aged 15-44. The number of seniors on the island has increased by 22% since 2006. The aging population puts a strain on the healthcare system.

Also, the outmigration includes a substantial number of physicians moving to the U.S. mainland¹⁸. Low Medicare payment rates (43% below the national average) leading to lower reimbursement rates to providers and plans, have contributed to the outmigration of doctors and affected residents' access to care¹⁹.





Provision of care

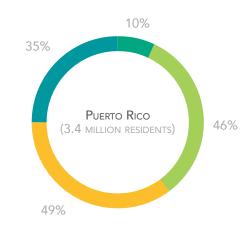
Community health and well-being relies on the existence of an integrated system of facilities and services to prevent, control and treat everyday health problems, as well as emergency response situations. In Puerto Rico, healthcare services are provided mainly by health insurers operating as Managed Care Organizations (MCOs), which reflects the privatization of the public healthcare system. Puerto Rico historically had a robust regionalized public healthcare system emphasizing prevention and sanitation²⁰.

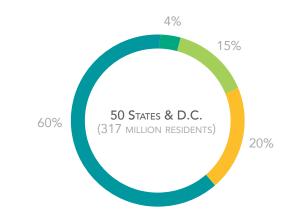
Community health centers play an essential role in the Island's healthcare system. In 2016, twenty health centers operating in 86 mostly rural sites provided comprehensive primary health care to more than 352,000 children and adults – over 1 in 10 residents²¹. However, 72 of Puerto Rico's 78 municipalities have been deemed medically underserved areas by the U.S. Health Resources and Services Administration²².

Pre-hurricane, patients had difficulty accessing specialists, experienced long wait times, and paying for prescription drugs. Studies have found evidence of limited access to prenatal services, children's primary care, specialists, and dental care²³. Also, Puerto Rico was found to have low HPV, influenza, and pneumonia vaccination rates compared to the U.S. mainland.

Community-based organizations have long provided essential services to the Island's most vulnerable populations, according to a study released in December 2016 by the "Red de Fundaciones de Puerto Rico" (Puerto Rico Foundations Network: PRFN) and "Movimento Una Sola Voz (MUSV)²⁴. The study provided data showing that as government services decline, more Puerto Ricans are seeking the services of community organizations. The study looked at the impact of some 4,500 nonprofit institutions that offer services including those related to social service, education, healthcare, and community and economic development such as: SER de Puerto Rico, Boys and Girls Club of Puerto Rico, Sor Isolina Ferré Centers, PECES, Taller Salud, Instituto Nueva Escuela, Nuestra Escuela and many others²⁵.

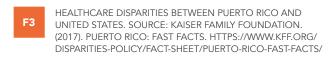
ECONOMIC AND INSURANCE PROFILE

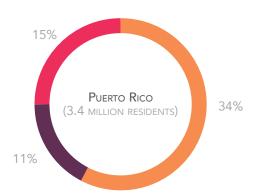




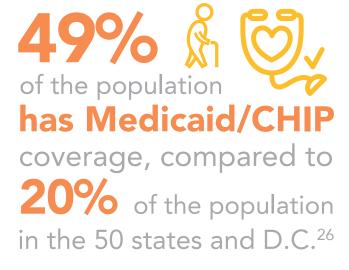


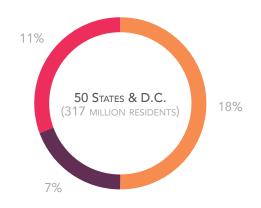
HEALTH STATUS AND HEALTH CONDITIONS (2016)





Given the Island's high poverty rate and aging population, Medicare and Medicaid play an essential role in Puerto Rico's healthcare system:







Medicare Advantage (MA) serves nearly 20% of the Island's population, or 580,000 people²⁷

Adults Reporting Poor/Fair Health

Adult Diabetes

Adult Heart Disease or Heart Attack

Federal financing of the healthcare system is a significant issue affecting both the delivery of services and the economic stability of the commonwealth. For states, the federal government pays a fixed share of costs based on the state's relative per capita income, while Puerto Rico receives a fixed annual funding cap. The funding cap has been insufficient to cover needs, leaving Puerto Rico with a funding gap. Puerto Ricans are also ineligible for other federal health programs including Supplemental Security Income (SSI) benefits²⁸.









Post-Disaster Context

Hurricane María was a significant shock that placed additional stress on the health, education and social services systems that already faced structural stresses stemming from economic instability, including declining infrastructure, demographic changes, and a high poverty rate²⁹.

EDUCATION



Some public schools suffered direct damage to facilities and supplies. Others were used as community shelters. Others were cleaned up by community residents and were ready to be reopened. Nevertheless, the public schools were all closed for over two months, and others for even longer, interrupting students' education and lives and their access to hot meals. It was reported that all 1,113 of the Island's schools were closed after the hurricane, affecting 347,000 students. Public schools were very slow reopening after Hurricane María, and it has been reported that up to one-fifth of the schools could remain closed³⁰. The lack of electricity and water, the destruction of homes and livelihoods, and the school closings all contributed to an accelerated rate of outmigration. Approximately 22,350 students have left since the hurricanes hit, according to the Puerto Rico Department of Education³¹. It is not clear whether students will return to Puerto Rico for the next school year. Nevertheless, the decline in the student populations and fiscal constraints have been used as rationales to close additional schools. This further increases the disruption and displacement already being experienced by many residents. In more rural locations and where transportation options are limited, the closure of a neighborhood school may force students and families to relocate or cut short their education. School closures will also affect the broader community, as schools are essential to disaster recovery and contribute to community safety, resilience, and social cohesion.

EXPOSURE TO DISEASE

Post-hurricane conditions of heat, standing water, and contaminated water are ideal conditions for mosquitoes and other insects to breed and spread vector and water borne diseases. Following hurricanes, there is also an increased risk for leptospirosis, hepatitis A, typhoid fever, and other gastrointestinal diseases. Reduced access to clean drinking or bathing water, safe food, and shelter can increase the prevalence of such diseases³². Specifically, there were 76 cases of suspected or confirmed leptospirosis as of October 2017, resulting in two confirmed deaths³³.

ESSENTIAL AND SOCIAL SERVICES



Many Island residents have had difficulties accessing groceries and fresh food. Lack of access to adequate food results in malnutrition, which can cause and exacerbate other health issues. Right after the storm, access to water was minimal, with water treatment and pumping stations knocked out by the hurricane. Vulnerable populations were particularly affected by lack of water and food as long lines for provisions were common, affecting the ability of individuals to get to work on time. Outmigration further exasperated the catastrophic situation for vulnerable populations as many businesses closed. The wait for aid was particularly painful for people without roofs or other refugees as flash floods and rain continued after the hurricane. Community organizations and non-profits stepped in to help alongside delayed federal aid, but many of the Island's most vulnerable communities remained in need months after the hurricane. Media reports and statements from public health officials indicate that many Puerto Ricans, including young students, are struggling with mental health issues posthurricane. Calls to the island's suicide hotline have doubled from 2,046 calls in August 2017 compared to 4,548 calls in January 2018³⁴.

HEALTH CARE INFRASTRUCTURE AND DELIVERY OF SERVICES



In the aftermath of the hurricanes, delivery of services became even more challenging; patients with kidney disease were extraordinarily at risk as the lack of power caused almost all of the Island's 47 dialysis centers to close. Patients also lacked gas for their vehicles to drive to the centers that remained open³⁵. Hospitals, community health centers, and other healthcare infrastructure suffered extensive damage from the storm, and most hospitals were left without electricity and with limited access to power generators with fuel. Access to treatments and drugs for all types of diseases was very challenging

As a result of the decreased access to healthcare, as well as the damage to hospitals and health centers, the official death toll on Puerto Rico from Hurricane María is widely understood to be underestimated. Officials report 64 total deaths, while studies of mortality data suggest that 1,052 more people died within the first 42 days following Hurricane María compared to previous years, though the cause of many of these excwess deaths or their potential link to the hurricane has not been certified³⁶.

Shocks and Stresses

The main shocks and stresses related to the health, education and social services sectors identified in this working group and through the community engagement process were focused from three main perspectives: environmental and climatic; physical infrastructure; and social and economic.

The main shocks identified include:



Hurricanes and tropical storms



Earthquakes and tsunamis



Floods



Epidemics



Failure of health, communication, energy, fuel, water, and food distribution systems

The main stresses identified include:



Climate change



Increase in sea level



Childhood poverty



Aging of the population and social insecurity for the retired



Migration of health professionals



Personal debt and increase in cost of living



Lack of investment in technology



School closure



Obsolete, deteriorated and aging infrastructure



Migration



Loss of employment and closures of companies; unemployment and underemployment



Discrimination (gender, race, sexual orientation, homeless)



Decrease in school enrollment



Poor access to mental health, preventive and medical treatment services



Limited government resources to meet essential needs and services



Lack of a fully developed and reliable public transportation system

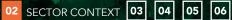


Food insecurity



Precariousness of retirement systems











Unmet Needs

Through the working group process and based on input from the community engagement process, we identified the following unmet needs:



LIMITED ACCESS AND QUALITY OF HEALTHCARE.

Access to preventative services, such as health education and primary care functions, in addition to disease management and acute care, surfaced as pressing concerns during working group discussions. Moreover, community members also raised and reinforced the need for additional individualized mental and behavioral health resources during the ReImagina Puerto Rico engagement efforts. Shocks and stresses exacerbate these issues and disproportionately impact Puerto Rico's most vulnerable populations, such as the poor, the elderly, the sick, and the geographically isolated.



LACK OF ACCESS TO A HIGH-QUALITY EDUCATION

SYSTEM. Fundamental working group concerns centered on access to high quality public education and enrichment regardless of socioeconomic status or geography. Puerto Rico has an education system that is increasingly segregated by class. Public schools are primarily for low-income family children except for selective public schools that offer specialties such as bilingual education, sports, music, math, and science. Also, during ReImagina Puerto Rico engagement activities at schools, educators, community members, and students indicated that education and enrichment opportunities are highly valued. Inequality in educational quality can contribute to chronic stresses in Puerto Rico, such as child poverty, economic inequality, and employment insecurity. Schools and enrichment programs also serve as hubs for communities and support social cohesion. During the post-hurricane recovery period, these schools also provide predictability for students that may lack this at home, as caretaker's struggle to provide for their families.



LACK OF TRANSPARENCY AND ACCESS TO DATA AND TECHNOLOGY. Lack of transparency and access to data were critical unmet needs that limited Puerto Rico's ability to identify vulnerable populations, support emergency response, develop location-specific interventions and programs, and adequately address shocks and stresses. The ability to analyze place-based data would assist in addressing concerns related to healthcare, education, and equity identified in this section. Given high outmigration rates following Hurricanes Irma and María, there is a need for timely accurate data to support education and healthcare decision-making and improvements.



LACK OF JUST, EQUITABLE, AND ECONOMICALLY SUSTAINABLE EDUCATION, HEALTHCARE, AND **SOCIAL SERVICES SYSTEMS.** Working group members were concerned with problems associated with inequity, such as the lack of universal healthcare, inadequate federal health care financing policies, and corruption. The importance of protecting fundamental human rights and providing for vulnerable members of the population, including the elderly and homeless, was also a primary concern. During engagement activities at schools, students, educators, parents, and community members also repeatedly raised an urgent need of caring for the most vulnerable.



The primary goal for the Health, Education & Social Services sector is to develop initiatives that ensure the provision of health, educational and social services to reduce existing and future vulnerabilities and chart a pathway towards improved equity and well-being with more participation of the people in its definition and implementation.



Short-term

- Creating conscience about early childhood education (0-6 years of age).
- Strengthening the collective capacity of communities to work together.
- Building on work done in other post-hurricane environments (e.g., New York City), identify best practices and near-term responses to bolster the education and healthcare systems.
- Identifying information shortfalls that can be addressed and rectified.
- Identifying critical mental health and poverty interventions to reduce suffering; coordinate with local stakeholders, philanthropic entities, and public-sector agencies to setup a cohesive environment for more extended term activities.
- Developing bold initiatives to attract the middle class back to the publicschool system to keep public schools open.
- Involving local communities.
- Identifying opportunities for integrating solutions with activities related to energy, data, transportation, water systems, housing (and others as determined by the Commission).











Medium-term

- Making notable progress in addressing the equity, data, and access shortfalls in the relevant sectors.
- Leveraging partnerships and resources through public, private, local and international NGO resources.
- Supporting navigation of this complex array of bureaucratic entities.
- Implementing programs with explicit support and linkages to local communities and other systems within the island.
- Opening up economic opportunities through these aforementioned efforts.





Long-term

- Lightening the burden of chronic and infectious disease on the Island as well as reducing mental health challenges.
- Using investments in the health and education sectors to reduce poverty, stem outmigration, reduce crime and violence, and catalyze employment and livelihood opportunities.
- Creating and deploying integrated data systems in response to a variety of environmental shocks and chronic social and economic stresses.
- Transforming the public-school system into a system that reflects the socioeconomic composition of the Island and that centers in developing human beings with employable skills that value social solidarity.



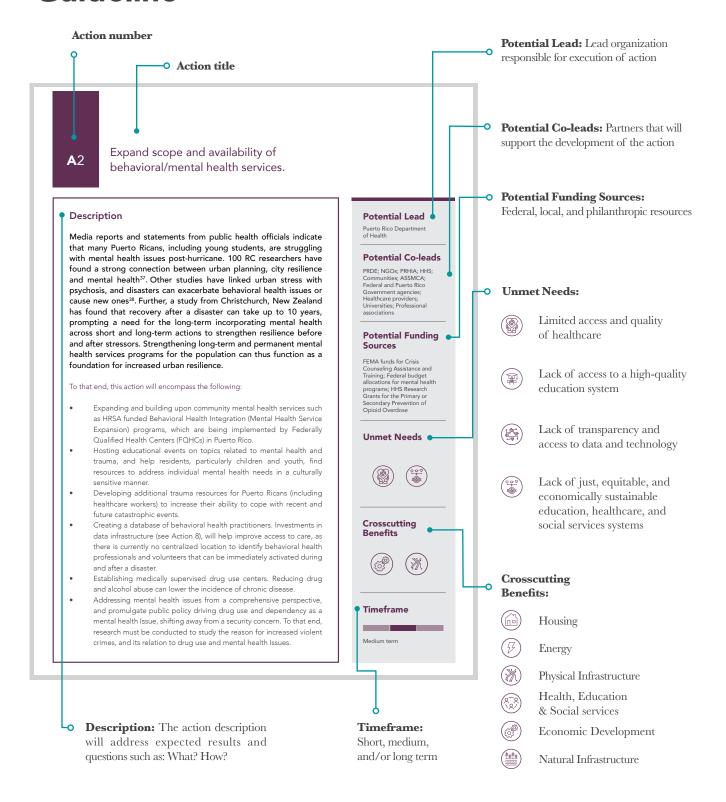








Action Sheet Guideline







Goal and Actions

Develop initiatives that ensure the provision of health, educational and social services to reduce existing and future vulnerabilities and chart a pathway toward improved equity and well-being with more participation of the people in its definition and implementation.

- **A1**
- Optimize healthcare financing to reduce the proportion of uninsured people and the shortage of healthcare professionals, and improve quality, access, and continuity of healthcare provision in disaster-related emergencies.
- A2

Expand the scope and availability of behavioral and mental health services.

A3

Address the social and environmental determinants of health that contribute to disease burden.

Α4

Promote schools as centers for education, social cohesion, and catalysts for economic development.

A5

Explore opportunities for workforce training, placement, and retention in the education sector.

Increase the resilience of educational infrastructure to protect students in the face of disasters and provide enhanced benefits to students and their communities every day.

A7 Invest in improvements to the physical infrastructure of healthcare facilities in order to improve the provision of services on a regular basis and in the face of multiple hazards.

Create integrated government data systems, and improved access to these, to ensure transparency and preparedness while co-benefiting government structures with actual reliable data for informed decision-making processes.

Identify and support vulnerable members of the population to address healthcare and social services needs related to the management of catastrophic events and emergencies as well as the ongoing care needs of this population.





Optimize healthcare financing to reduce the proportion of uninsured people and the shortage of healthcare professionals, and improve quality, access, and continuity of healthcare provision in disaster-related emergencies.

Description

This action seeks to evaluate the financial sustainability of the healthcare system, recognizing that the reduction of the insured population and reduction of health services coverage is never a goal of healthcare systems.

To that end, this action will encompass the following:

- Conducting an actuarial and economic feasibility study, identifying
 necessary conditions to reduce the uninsured population, while achieving
 financial sustainability. This study must evaluate alternate scenarios for
 health financing reforms, such as Oregon, Massachusetts, and Colorado.
 Existing local entities, such as the Multisector Council on Health, whose
 purpose is to study and analyze healthcare financing and provision models
 can take over the data collection and validation.
- Producing an estimate of healthcare spending in PR to determine how current costs hinders economic development and out-of-pocket healthcare related expenses impose a burden on families.
- Including a breakdown of the overhead burden in healthcare expenses, such as administrative expenses, medical billing, marketing practices, and other non-healthcare related expenses in the actuarial and economic feasibility study.
- Embeding a thorough Stakeholder Engagement Plan, consistent with several federal mandates such as State Medicaid Medical Care Advisory Committee (42 CFR 431.12), and the State Innovation Plan under the AffordableCareAct(ACA). Suchplanshould also includes tatelegislation such as Law 235-2015 that creates the Multisectoral Council on Health to provide advice to the Governor and Legislative Assembly on health policy issues.

Potential Lead

Puerto Rico Department of Health

Potential Co-leads

NGOs; Multisector Council on Health; PRHIA; HHS; FQHCs; PRPA; PRDE; 330 clinics; UPR Medical Sciences campus

Potential Funding Sources

CDMG-DR; HHS; USODOED

Unmet Needs





Crosscutting Benefits



Timeframe

Short and medium term

To address quality issues in the healthcare system, a set of initiatives can be pursued, including:

- 1. Aligning any recovery work with the PR State Health Innovation Plan.
- 2. Improving access to quality of care by attracting and retaining qualified professionals with improved professional opportunities.
- 3. Incorporating health and nutrition education into existing school curriculums as a part of healthcare delivery to help prevent and manage disease and involve communities on prevention and healthy lifestyles.
- 4. Creating policies for implementing an evidencebased approach to healthcare provision across public healthcare facilities.
- 5. Expanding coordination with hospitals, public health organizations, and health providers to address health disparities, prepare for disasters, and increase community wellness.
- 6. Establishing a plan with ports and private shipping companies to manage supplies for health and other basic needs that can be deployed during emergencies.
- 7. Establishing standard policies and waivers through legislation with Executive Order templates to be activated upon emergency declaration.







Expand the scope and availability of behavioral and mental health services.

Description

Media reports and statements from public health officials indicate that many Puerto Ricans, including young students, are struggling with mental health issues post-hurricane. 100 RC researchers have found a strong connection between urban planning, city resilience and mental health³⁷. Other studies have linked urban stress with psychosis, and disasters can exacerbate behavioral health issues or cause new ones³⁸. Further, a study from Christchurch, New Zealand has found that recovery after a disaster can take up to 10 years, prompting a need for incorporating mental health across short and long-term actions to strengthen resilience before and after stressors. Strengthening long-term and permanent mental health services programs for the population can thus function as a foundation for increased urban resilience.

To that end, this action will encompass the following:

- Expanding and building upon community mental health services such as HRSA funded Behavioral Health Integration (Mental Health Service Expansion) programs, which are being implemented by Federally Qualified Health Centers (FQHCs) in Puerto Rico.
- Hosting educational events on topics related to mental health and trauma, and help residents, particularly children and young adults, find resources to address individual mental health needs in a culturally sensitive manner.
- Developing additional trauma resources for Puerto Ricans (including healthcare workers) to increase their ability to cope with recent and future catastrophic events.
- Creating a database of behavioral health practitioners. Investments in data infrastructure (see Action 8), will help improve access to care, as there is currently no centralized location to identify behavioral health professionals and volunteers that can be immediately activated during and after a disaster.
- Establishing medically supervised drug use centers. Reducing drug and alcohol abuse can lower the incidence of chronic disease.
- Addressing mental health issues from a comprehensive perspective, and promulgate public policy driving drug use and dependency as a mental health Issue, shifting away from a security concern. To that end, research must be conducted to study the reason for increased violent crimes, and its relation to drug use and mental health Issues.

Potential Lead

Puerto Rico Department of Health

Potential Co-leads

PRDE; NGOs; PRHIA; HHS; Communities; ASSMCA; Federal and Puerto Rico Government agencies; Healthcare providers; Universities; Professional associations

Potential Funding Sources

FEMA funds for Crisis Counseling Assistance and Training; Federal budget allocations for mental health programs; HHS Research Grants for the Primary or Secondary Prevention of Opioid Overdose

Unmet Needs





Crosscutting Benefits





Timeframe

Medium term

Address the social and environmental determinants of health that contribute to disease burden.

Description

The environment affects our health in a variety of ways. Studies abound on the interaction between human health and the environment, and environmental risks have been proven to significantly impact human health, either directly by exposing people to harmful agents, or indirectly, by disrupting life-sustaining ecosystems³⁹. The influence of environmental community factors in health and provision of healthcare services including mental health can be noted in pre-and post-disaster scenarios. These environmental factors, if addressed adequately, can have a cascading effect in a wide range of other aspects of human life, including health, economic, social, and educational benefits. This action places a strong focus on prevention, education and planning to enhance policies that will have a direct impact on public health. Steps to implement this action include:

- Building a Health in All Policies (HiAP) approach to recovery decision-making, that provides a strong focus on prevention, security and education. In coordination with the Physical Infrastructure Sector, leverage investments in natural and physical infrastructure to maximize opportunities for recreation, physical activity, and healthy lifestyle. Develop a process for integrating active design and complete streets into urban planning initiatives and infrastructure project design. "Complete streets" describes a system that meets the needs of all users of the streets, including safety and security concerns, pedestrians, bicyclists, users of public transportation, motorists, children, seniors, persons with disabilities, movers of commercial goods and emergency vehicles.
- Enhancing existing programs and supporting initiatives for healthy meals and after-school programs for students; training and education for expectant parents; health education for nutrition, disease prevention and disease selfmanagement for the population in general with a focus on the elderly.
- Assessing the degree to which Puerto Rico's ability to prevent mosquitoborne diseases declined after Hurricane María because of damaged infrastructure. Identify risk hotspots and potential infrastructure, community, and health system interventions for future vector control.
- Advancing health and well-being through comprehensive land use planning and attention to community design. Community design is a key determinant in reducing infectious and chronic disease challenges and addressing equity issues related to access and environmental justice.
- Exploring the linkages between community design, crime and violence.
- Consulting community-based organizations, who have long provided essential services to the Island's most vulnerable populations to learn more about needs and successful solutions.

Potential Lead

Puerto Rico Planning Board and Puerto Rico Department of Health

Potential Co-leads

Municipalities; ASSMCA; FHQCs; Puerto Rico Government agencies; NGOs; PRDHe; OPPEA

Potential Funding Sources

Medicare/Medicaid; USDA Nutrition Assistance Program; NIH grants

Unmet Needs



Crosscutting **Benefits**







Timeframe

Short and medium term









Promote schools as centers for education, social cohesion, and catalysts for economic development.

Description

Currently, the closure of schools and the lack of emphasis placed in early stages of education puts undue stress on vulnerable populations. We need creative solutions that incorporate strong stakeholder engagement and centers the relation of the community with the school, given the demographic and fiscal context. To that end the following activities should be implemented:

- Designing a program to safeguard the provision of early childhood educational services across all Puerto Rico in risk-free locations. Furthering the education services to early childhood through early childhood development centers that include extended hours would create the necessary conditions for parents who currently do not have a family support structure to seek employment. Special attention must be given to identifying initiatives that safeguard these needs for remote and rural populations.
- Developing a study that evaluates alternative education models to provide high-quality public education that helps build communities and reduce class segregation.
- Involving the community in local school operations, evaluations, and decision-making. This can be done pursuing models like the Instituto Nueva Escuela (INE) Schools, where participatory school governance was achieved by establishing school councils with participation from teachers, administration, parents, students and community members. Another option to explore include conferring administrators and teachers enough autonomy to hire staff and design curricula for their schools.
- Creating a methodology to evaluate curricula that embed Human Development Sciences. Evaluate pedagogical methodologies and curricula in light of these criteria. Prioritize access for children to holistic approaches in pedagogy.

Potential Lead

Puerto Rico Department of Education

Potential Co-leads

Educators; INE; Academic institutions; Community organizations; Parents; Teachers; NGOs; Cooperatives

Potential Funding Sources

CDBG-DR; NIH Grants; USDOED 21st Century Community Learning Centers

Unmet Needs







Crosscutting Benefits



Timeframe

Short and medium term

- Designing and implementing curricula that foster creativity and youth entrepreneurship, explore new and innovative uses of technology, and teach healthy lifestyles. Reduce standardized test requirements, which could reduce the test administration cost significantly and allow for more bottom-up budgeting, allocating the resources closer to the student. Pilot projects along urban and rural schools can be used to evaluate the effectiveness of curricula.
- Inserting project-based and service-based learning methodologies into the curriculum.
- Leveraging investments in schools to benefit the local community. Use schools' open areas for community work and cultural activities.
- Developing clear criteria for school closures that take into consideration equity, student transportation, drop-out rates and other costs/ benefits associated with neighborhood schools; submit any school closing or any other public social or healthcare service to a participatory process that informs and allows communities to be a part of the process for evaluating the alternatives.
- Evaluating the full range of benefits and risks associated with educational reform initiatives to ensure positive educational outcomes. Particular attention should be paid to the quality of education (academic performance, reading, and writing, family participation, low administrator/ faculty/student turnover), the consequences of concentrating in default neighborhood schools, and adequate access.









Explore opportunities for workforce training, placement, and retention in the education sector.

Description

Address issues that create unfair labor conditions and, in turn, provoke the exodus of well-prepared, capable teachers.

Activities to support the implementation of this action include:

- Commissioning a study to identify alternatives for closing the teachers' pay-gap between similar jurisdictions taking into account Puerto Rico's current fiscal capacity.
- Developing participatory budgets by educational regions to improve the use of resources for the increased resilience of educational services across schools. Special attention should be given to minimize economic burdens on teachers and reduce administrative expenses, as they continue to recover from hurricane impacts across school facilities.
- Providing a training program for teachers to integrate disaster risk reduction principles as part of the educational curricula. This activity can be coordinated with local universities to make the training available for public and private school teachers.
- Promoting the development of policies to allow teachers join Social Security Program and other initiatives that enable improved working conditions for personnel engaged in educational services.
- Coordinating with non-governmental organizations to foster university scholarships and stipends for top students who commit to teach on the Island for at least five years, contingent upon needs and gaps identified by the Puerto Rico Department of Education.

Potential Lead

Puerto Rico Department of Education and Puerto Rico Legislature

Potential Co-leads

Academic institutions; Community organizations; NGOs; DOLHR; Professional associations; PRMA

Potential Funding Sources

CDBG-DR

Unmet Needs



Crosscutting **Benefits**





Timeframe

Medium term









Increase the resilience of educational infrastructure to protect students in the face of disasters and provide enhanced benefits to students and their communities every day.

Description

Schools perform vital functions in educating youth, but also by serving as critical hubs in communities. When a school is closed in the event of a disaster, either due to damage or its use as an emergency shelter, it prevents children from returning to school, which limits the ability of parents to return to work. There is a ripple effect on the recovery of the whole of society. Facilities and their associated infrastructure must be capable of withstanding the impact of natural disasters with limited or no damage to allow swift recovery of community functions. Recommended actions steps include the following:

- Conducting a vulnerability assessment of the Island's school infrastructure
 portfolio and identify schools which are most vulnerable to hazards and
 use this information for long-term mitigation planning. This activity should
 enable a systems approach for prioritizing infrastructure investments
 informed by risk awareness.
- Improving the reliability of infrastructure that supports schools on a regular basis and in times of emergency according to the results of the vulnerability assessment. Improvement must include alternative energy, water harvesting and other innovative methods that reduce dependence on centralized systems.
- Integrating passive design concepts into the school buildings taking into consideration the orientation of the building, natural daylight, and cross ventilation to reduce energy needs and maximize student performance.
- Limiting impervious surfaces on school grounds to decrease runoff and increase rainwater absorption.
- Building and retrofit school facilities with locally-available materials, construction techniques, and labor to stimulate the local economy and reduce reliance on and cost of foreign products. Design and construction should conform to the latest adopted building code.
- Involving the community in the visioning, design, and maintenance of schools.

Potential Lead

Puerto Rico Department of Education and Puerto Rico Public Buildings Authority

Potential Co-leads

PREMA; PRDHo; NGOs; Puerto Rico Legislature; Public school teachers

Potential Funding Sources

CDBG-DR; FEMA; AmeriCorps

Unmet Needs



Crosscutting Benefits









Timeframe

Medium and long term

- Using schools as multi-purpose, cultural utilities that provide resources and services to the broader community, such as capacity building/re-training spaces for displaced adults, libraries, internet access, performance/art spaces, playgrounds, gardens, meeting rooms, and other uses.
- When schools are closed and no longer needed for education, considering the infrastructure to build community resilience in other ways such as for housing, community centers, or emergency shelters with the option to reinstate them as schools in the future if needs change.
- Where schools are necessary as emergency shelters, ensuring implementation of contingencies so that students can have access to and continue to receive education services after the emergency has finalized.

Strategies that establish alliances with municipal governments, philanthropists, foundations and, the school community can strengthen this action to improve the actual overall condition of schools.







Invest in improvements to the physical infrastructure of healthcare facilities in order to improve the provision of services on a regular basis and in the face of multiple hazards.

Description

The physical infrastructure of hospitals and healthcare clinics in Puerto Rico suffered structural damages and power losses as a result of the hurricanes, preventing the provision of critical healthcare services. The recovery process presents an opportunity to make improvements to the infrastructure that will benefit users on a regular basis. The following are essential components of the process which should be considered:

- Development and updating of a multi-hazard assessment for healthcare facilities.
- Comparison between the current expected performance of each facility its the desired performance. Performance should be evaluated based on everyday operations and in defined emergency scenarios. The comparisons should identify the physical building performance (e.g., acceptable levels of structural and non-structural damage), the building services performance (e.g., water, power, communications needs), operations (e.g., downtime, staffing), and other off-site considerations (e.g., access to the site, transportation, power grid). After identifying the gap, a cost-benefit analysis should be carried out to determine the most cost-effective solutions.
- Prioritization of which healthcare facilities should be upgraded using this systems-level assessment at a regional or Island-wide level, taking into account both cost to upgrade to desired performance level and criticality of service/demand in emergency scenarios.
- Provision of backup power, water, medical supplies, food, fuel for generators and emergency vehicles and housing for key staff on site.
- Development of emergency plans, training, and operational procedures, factoring in roles and availability of staff to complement physical infrastructure upgrades.
- Leverage investment for improvements in the performance of healthcare facilities during emergency scenarios in order to enhance everyday performance and address deficiencies that existed before the hurricanes. For example, consider how modifications to strengthen the envelope of buildings can be used to improve energy efficiency and thermal performance. Research options for distributed energy or combined heat and power/cogeneration to provide not only reliable power but also reduced emissions and potential revenue generation. Perform analysis of the use of green infrastructure on site to mitigate flood risk and create more appealing environments for patients and staff.

Potential Lead Puerto Rico Department of Health **Potential Co-leads** PREMA; FEMA; HHS; Private healthcare providers **Potential Funding** Sources CDBG-DR: HMGP **Unmet Needs** Crosscutting **Benefits Timeframe** Medium and long term



Create integrated government data systems, and improved access to these, to ensure transparency and preparedness while co-benefiting government structures with actual reliable data for informed decision-making processes.

Description

Accurate, accessible and reliable information has been identified as one of the most important areas of opportunity in the wake of Hurricane María. Improving the way data is collected and managed can have a direct impact in supporting emergency preparedness and response actions, state, federal and municipal governments. In addition, the way in which the information is made available will have tremendous effects on how NGOs, communities, families, and individuals may plan, prepare and respond to emergencies.

Improving data collection, management, and dissemination will enhance preparedness, emergency management, and disaster response. In addition, it will also support the Government of Puerto Rico and its municipalities in engaging on a more robust and reflective long-term comprehensive planning, increased stakeholder engagement and trust, improve tax collections and revenue, and informed decision-making processes that will improve healthcare policies and provision, education, and all other executive branch duties.

The purpose of this action is to use technology, data collection, and GIS mapping to assemble evidence of specific data, in order to use this data to develop place-specific health and social service policies.

Government entities with data collection, management, and dissemination responsibilities must emphasize on specific attributes required to implement this action effectively. These are systems integration, criteria independence, and stakeholder engagement. In this context, activities that support the implementation of this action include:

- Assessing data shortfalls that we discovered after Hurricane María.
- Creating and updating a directory and a GIS geodatabase of all critical service provider resources, responders, and infrastructure, including location, the span of service capacity and preparedness plan, which they must maintain to keep participating in the mapping.
- Creating a directory of all public and private healthcare sector resources, and responders, including where they are located and their emergency preparedness plan, which should be routinely updated.

Potential Lead

Puerto Rico Department of Health

Potential Co-leads

PRPB; PRDF; Government organizations accountable for statistics and data; Private insurers and healthcare providers; Multisectoral Council on Health; FEMA; HHS, Municipalities; Universities; NGOs.

Potential Funding Sources

NIH grants; Other federal funding under HR-1982

Unmet Needs



Crosscutting Benefits







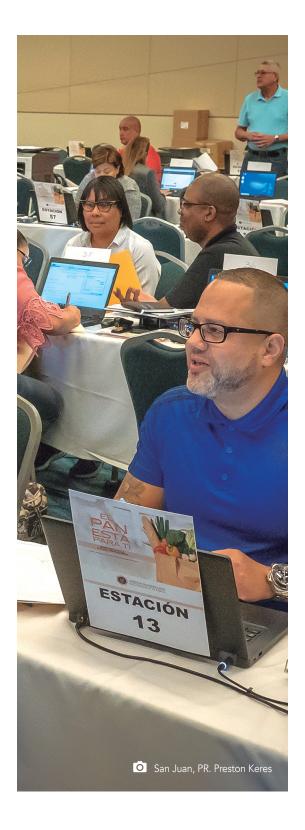




Timeframe

Medium and long term

- Training communities to gather, use and interpret information. This training will strengthen their preparedness skills while at the same time provide an active collaboration role to communities and civic sector. This dynamic role may include identifying and filling data gaps such as locating vulnerable populations and risks.
- Increasing electronic health record adoption and telemedicine capabilities.
- Ensuring that any database that addresses health determinants includes behavioral health and mental health care, since these are closely related and should be treated comprehensively.
- Carrying out syndromic surveillance using reliable data sources.
- Ensuring right-sizing of staff dedicated to the collection, maintenance, synthesis, and deployment of data to identify populations at risk and serve vulnerable populations during emergencies and non-emergencies.
- Monitoring and collecting data to measure cost and effectiveness of programs and services, including the cost of health insurance administration.
- Identifying potential technological investments and human resource investments for improved ability to make integrated data-driven decisions during normal times and emergencies.







Identify and support vulnerable members of the population to address healthcare and social services needs related to the management of catastrophic events and emergencies as well as the ongoing care needs of this population.

Description

Access to comprehensive, affordable and equitable services ranked high in importance amongst stakeholders. The most vulnerable members of society, including the growing elderly population and children living in poverty or the child welfare system, require targeted attention.

We should consider the elderly a priority, as 22% of the population in Puerto Rico is around 60 years old or over, a higher percentage than in the United States. Children in the foster care system, or at risk of entering the system, should also be considered a priority. Research tells us that these children have incredibly detrimental outcomes- including increased likelihood of being homeless, having chronic mental health problems, vulnerability to illnesses, dropping out of school, and teenage childbearing. Studies have also extensively documented the rise of child abuse and maltreatment in the wake of natural disasters. Recent federal legislation, the Family First Prevention Services Act, will allow Puerto Rico to draw on IV-E funding- in the same way that states (outside of the Social Services Cap) for preventive, family-based mental health services that can result in strengthening families with children, and hence reducing out of home placements. Another proposed area of focus is to address persons living with chronic diseases, that can often be positively affected by improved behavioral and environmental factors.

Proposed steps are to:

- Define, identify, and map vulnerable populations, including homeless persons and drug users.
- Implement a needs assessment around chronic diseases.
- Identify geographic hotspots of chronic disease burden and disparities;
- Identify barriers to addressing these issues.
- Identify community-based interventions; including promising and evidence-informed practices and approaches, such as multi-systemic therapy and family-centered approaches.
- Identify, map and maintain a database of NGOs and faith-based organizations that provide health and social services.

Community-based organizations should be consulted to learn more about needs and successful solutions. Also, a scan of the types of social services and interventions currently available to these communities, and whether they are evidence-based or informed or have a track record of eliciting the desired outcomes is essential to ensure optimal use of resources.

Potential Lead

Puerto Rico Department of Health

Potential Co-leads

PRHIA; HHS; PRDF; OPPEA

Potential Funding Sources

Medicare/Medicaid; HHS Reducing Health Disparities Among Minority and Underserved Children grant; NIH grants; USDA Nutrition Assistance Program; US Children's Bureau Title IV- E funding

Unmet Needs







Crosscutting Benefits







Timeframe

Short term



05 RESOURCES

Glossary

Critical systems

Those where a failure can cause significant economic losses, physical damage or in the worst cases threats to human life.

Disaster

Severe alterations in the normal function of a community or society due to hazardous physical events interacting with vulnerable social conditions, leading to widespread adverse human, material, economic, or environmental effects that require immediate emergency response to satisfy critical human needs and that may require external support for recovery. Means any natural catastrophe (including any hurricane, tornado, storm, high water, wind-blown water, tsunami, earthquake, volcanic eruption, landslide, landslide, snowstorm or drought), or, regardless of the cause, any fire, flood, or explosion, in any part of Puerto Rico that, in the determination of the President, causes damage of sufficient severity and magnitude to justify an important disaster assistance to supplement the efforts and available resources of the state, local government and disaster relief organizations to alleviate the damage, loss, hardship or suffering caused by it.

Effectiveness

The degree to which something is successful in producing an intended or expected result, success or purpose.

Efficiency

Performing or functioning in the best possible manner with the least waste of time and effort.

Emergency preparedness

Actions taken to plan, organize, equip, train, and exercise to build and sustain the capabilities necessary to prevent, protect against, mitigate the effects of, respond to, and recover from those threats that pose the greatest risk.

Exposure

The presence of people; livelihoods; environmental services and resources; infrastructure; or economic, social, or cultural assets in places that could be adversely affected.

Flexibility

Flexibility implies that systems can change, evolve and adapt in response to changing circumstances. This may favor decentralized and modular approaches to infrastructure or ecosystem management. Flexibility can be achieved through the introduction of new knowledge and technologies, as needed. It also means considering and incorporating indigenous or traditional knowledge and practices in new ways.

Geographic Information System (GIS)

A framework for gathering, managing, and analyzing data and spatial location, it uses maps to organize layers of information into visualizations. Rooted in the science of geography, GIS integrates many types of data.

Governance

As society or groups together, they organize themselves to make decisions.

Grant programs

Programs that provide a sum of money given by a government or other organization for a particular purpose. These programs are discretionary or formula grants and/or cooperative agreements administered by a federal agency.

Household

The family and live-in aide, if applicable.

Inclusive

Emphasizes the need for consultation and commitment of communities, including the most vulnerable groups. Addressing the shock and stress faced by a sector, location or community isolated from others is an exclusion for the notion of resilience. An inclusive approach contributes to a sense of shared ownership or a joint vision to build resilience.

Infrastructure

Set of works and services that are considered fundamental and necessary for the establishment and operation of an activity. These include communication systems, aqueducts and sewers, electricity, telephone and health facilities, education and recreation.

Integrated

Integration and alignment between systems promotes consistency in decision-making and ensures that all investments are mutually supportive to a common outcome. Integration is evident within and between resilient systems and across different scales of their operation. Exchange of information between systems enables them to function collectively and respond rapidly through shorter feedback loops throughout society.

Mitigation

(for risk) The lessening of the potential adverse impacts of physical hazards (including those that are human-induced) through actions that reduce hazard, exposure, and vulnerability.

(for Climate Change) A human intervention to reduce the sources or enhance the sinks of greenhouse gases.

Non-governmental Organization (NGO)

An entity with an association that is based on interests of its members, individuals, or institutions. It is not created by a government, but it may work cooperatively with government. Such organizations serve a public purpose, not a private benefit.

Nonprofit Organization

A tax-exempt organization that serves the public interest. In general, the purpose of this type of organization must be charitable, educational, scientific, religious or literary. It does not declare a profit and utilizes all revenue available after normal operating expenses in service to the public interest. This organization is a 501(c)(3) or a 501(c) (4) designate.

Public-Private Partnerships

A cooperative arrangement between two or more public and private entities, typically of a long-term nature. These partnerships between a government agency and private-sector company can be used to finance, build and operate projects, such as public transportation networks, parks, and convention centers.

Reconstruction

The reconstruction or replacement of permanent residential, commercial or industrial facilities damaged or destroyed in a major disaster, as well as the construction of public or private infrastructure at a large scale, the addition of community improvements, and or the restoration of a healthy economy.

Recovery

Disaster recovery is the phase of the emergency management cycle that begins with the stabilization of the incident and ends when the community has recovered from the impacts of the disaster.

Redundant

Refers to spare capacity purposely created within systems so that they can accommodate disruption, extreme pressures, or surges in demand. It includes diversity: the presence of multiple ways to achieve a given need or fulfil a particular function. Examples include distributed infrastructure networks and resource reserves. Redundancies should be intentional, cost-effective and prioritized at a society scale.

Reflective

Accepts the inherent and ever-increasing uncertainty and change in today's world. Rflective systems have mechanisms to continuously evolve and modify standards or norms based on emerging evidence, rather than seeking permanent solutions based on the status quo. As a result, people and institutions examine and systematically learn from their past experiences and leverage this learning to inform future decision-making.

Resilience

The capacity of individuals, communities, institutions, businesses and systems to survive, adapt and thrive no matter what stresses or shocks they encounter.

Resilience dividend

The net social, economic, and physical benefits achieved when designing initiatives and projects in a forward looking, risk-aware, inclusive, and integrated way.

Resourceful

Implies that people and institutions are able to rapidly find different ways to achieve their goals or meet their needs during a shock or when under stress. This may include investing in capacity to anticipate future conditions, set priorities, and respond, for example, by mobilizing and coordinating wider human, financial and physical resources. Resourcefulness is instrumental to a society's ability to restore functionality of critical systems, potentially under severely constrained conditions.

Risk

Potential consequences in which something of value is in danger with an uncertain outcome, recognizing the diversity of values. Often, risk is represented as the probability of occurrence of dangerous events or trends multiplied by the impacts in case such events or trends occur. Risks result from the interaction of vulnerability, exposure and danger.

Robust

Robust systems include well-conceived, constructed and managed physical assets that can withstand the impacts of hazard events without significant damage or loss of function. Robust designs anticipate potential system failures and ensure failure is predictable, safe, and not disproportionate to the cause. Over-reliance on a single asset, cascading failure and design thresholds that might lead to catastrophic collapse if exceeded are actively avoided.

Sea level rise

An increase in global mean sea level as a result of an increase in the volume of water in the world's oceans. The two major causes of global sea level rise are thermal expansion caused by warming of the ocean (since water expands as it warms) and increased melting of land-based ice, such as glaciers and ice sheets.

Shock

Sudden, sharp events that threaten a society, including: earthquakes, floods, disease outbreaks, and terrorist attacks.

Social cohesion

Tendency of a group to be in unity while working toward a goal or to meet the emotional needs of its members (Carron and Brawley, 2000).

Susceptibility

Society's and ecosystems' predisposition to suffer as a result of intrinsic and contextual conditions that make it plausible for such systems to collapse or experience damage due to the influence of a dangerous event.

Title IV-E funding

Funds from the Federal Foster Care Program to assist in providing safe and stable out-of-home care for children until the children are safely returned home, placed permanently with adoptive families or placed in other planned arrangements for permanency.

Unmet needs

The needs of communities or families that have not been attended by federal government institutions as a result of a disaster.

Vector-borne diseases

Human illnesses caused by parasites, viruses and bacteria that are transmitted by mosquitoes, sandflies, triatomine bugs, blackflies, ticks, tsetse flies, mites, snails and lice.

Vulnerability

The propensity or predisposition to be adversely affected. Vulnerability comprises a variety of concepts and elements that include sensitivity or susceptibility to harm and lack of responsiveness and adaptation.

Vulnerable populations

Groups and communities at higher risk as a result of barriers they experience to social, economic, political and environmental resources, as well as limitations due to illness or disability.



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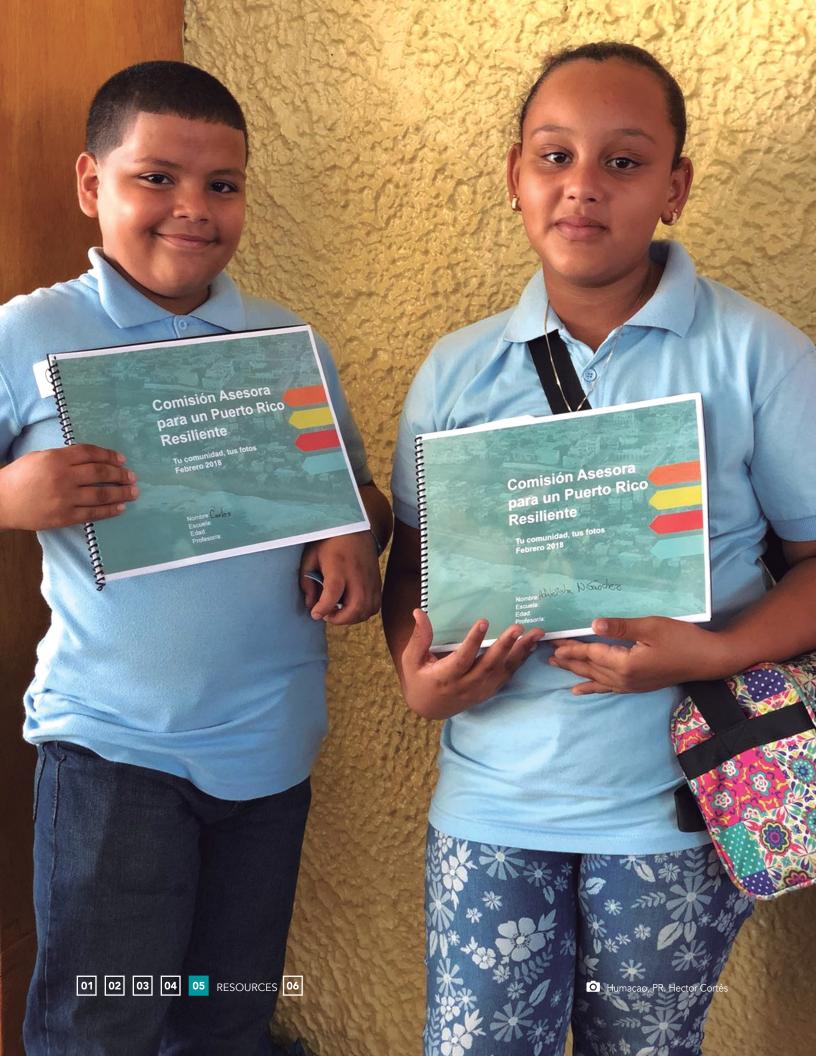
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APPENDIX



Methodological Approach

The Commission's main objective is to produce an actionable and time-sensitive set of recommendations to guide the use of philanthropic, local government, and federal recovery funds to repair and rebuild the critical systems devastated by Hurricane María and build back an Island more physically, economically, and socially resilient. To achieve this, the Commission applied two primary conceptual frameworks to guide the process of reimagining Puerto Rico's recovery and reconstruction: FEMA's National Disaster Recovery Framework¹⁰ and The Rockefeller Foundation's City Resilience Framework¹¹.

FEMA's National Disaster Recovery Framework (NDRF) establishes a common platform and forum for a comprehensive approach to how a community builds, sustains, and coordinates the delivery of recovery efforts. Under this framework, the concept of recovery under this framework includes the restoration and strengthening of key systems and resources that are critical to the economic stability, vitality, and long-term sustainability of communities. These recovery elements are organized and coordinated under six Recovery Support Functions: 1) community planning and capacity building; 2) economic recovery; 3) health and social services; 4) housing; 5) infrastructure systems; and 6) natural and cultural resources. In the aftermath of Hurricanes Irma and María in 2017, this framework

will guide all federal disaster recovery actions coordinated by FEMA, in close coordination with other federal and Puerto Rican agencies.

The NDRF advances the concept that recovery extends beyond merely repairing damaged structures. It also includes the continuation or restoration of services critical to supporting the physical, emotional, and financial well-being of impacted community members. Among these are: health (including behavioral health) and human services capabilities and networks, public and private disability support and service systems, educational systems, community social networks, natural and cultural resources, affordable and accessible housing, infrastructure systems, and local and regional economic drivers. In turn, these elements contribute to rebuilding resilient communities equipped with the physical, social, cultural, economic, and natural infrastructure required to address future needs.

Arup and The Rockefeller Foundation's City Resilience Framework (CRF) provide a more comprehensive vision of how resilience can be integrated into Puerto Rico's post-disaster recovery process. The CRF, while focused on a city scale, provides a conceptual framework of resilience that is applicable across different geographical scales, including small island nations. This framework identifies seven resilience qualities: inclusive, integrated, flexible, redundant, reflective, resourceful,





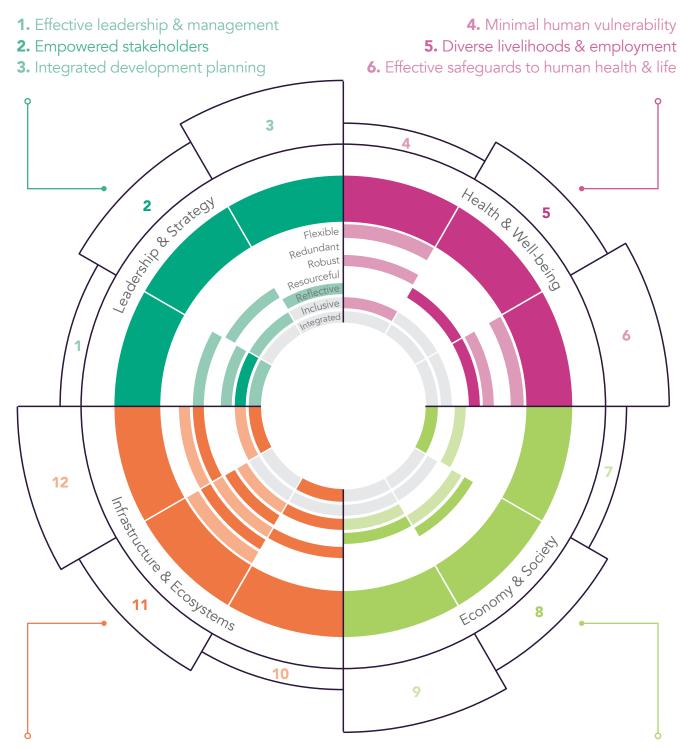


and robust. In addition to these qualities, it suggests that resilience can be enhanced by addressing a combination of 12 factors categorized under four broad dimensions: I) health and well-being of individuals, II) economy and society, III) infrastructure and ecosystems, and IV) leadership and strategy. The 12 factors include: 1) effective safeguards to human health and life; 2) diverse livelihoods and employment; 3) minimal human vulnerability; 4) reliable mobility and communications; 5) effective provision of critical services; 6) reduced exposure and fragility; 7) sustainable economy; 8) comprehensive security and rule of law; 9) collective identity and community support; 10) effective leadership and management; 11) empowered stakeholders; and 12) integrated development planning (see Figure 6).

The NDRF served as the main framework to guide the planning of implementation, execution, and monitoring of recovery and reconstruction actions. To reinforce this approach, we employed a modified version of the CRF to analyze and prioritize the recovery and reconstruction actions with the highest resilience impact.

As described in Section I, the Commission embarked on an ambitious participatory process in order to achieve the primary goals and objectives set forth for ReImagina Puerto Rico. This process consisted of four sets of group meetings: the Public Sector Advisory Group, Sector-focused Working Groups, Community Focus Groups, and Youth Participatory Photography sessions. This process sought to bring the broadest and most diverse set of voices together, facilitating an essential conversation between students, community groups, business sector representatives, high-level government officials, academics, and other Puerto Rican leaders to reimagine a more resilient Puerto Rico.

High-level officials from key local government agencies and several rural and urban municipalities representing the main political parties within the Island comprised the Public Sector Advisory Group. Participants included representatives from the Puerto Rico Planning Board, the Puerto Rico Department of Housing, the Puerto Rico Central Office of Recovery, Reconstruction, and Resilience, the Puerto Rico representative to the Financial and Oversight Management Board, and the mayors of Bayamón, Carolina, Cidra, and Villalba, among other active participants.

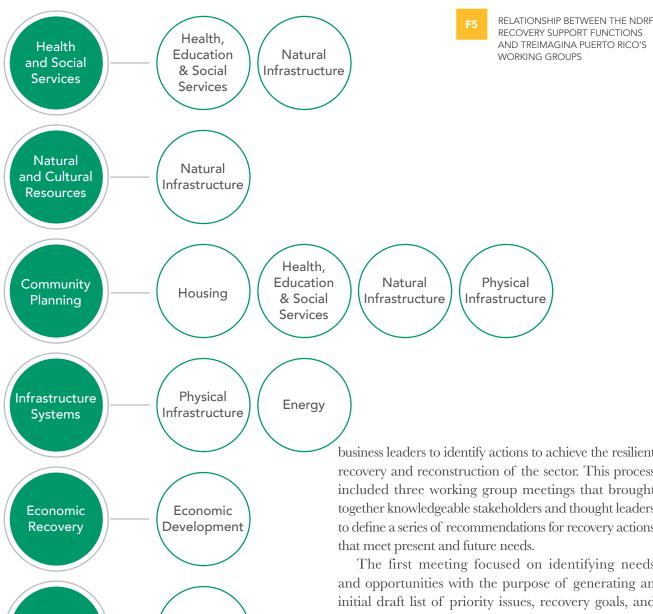


- 10. Reduced exposure and fragility
- 11. Effective provision of critical services
- 12. Reliable mobility & communications
- **7.** Collective identity & community support
 - **8.** Comprehensive security & rule of law
 - **9.** Sustainable economy









The Commission divided working groups into the following six key sectors: 1) Housing, 2) Energy, 3) Physical Infrastructure, 4) Health, Education & Social Services, 5) Economic Development, and 6) Natural Infrastructure. These sectors have direct linkages to all the Recovery Support Functions under the NDRF, as described in Figure 7.

Housing

The purpose of the working groups was to facilitate a technical discussion among Puerto Rico experts and business leaders to identify actions to achieve the resilient recovery and reconstruction of the sector. This process included three working group meetings that brought together knowledgeable stakeholders and thought leaders to define a series of recommendations for recovery actions

The first meeting focused on identifying needs and opportunities with the purpose of generating an initial draft list of priority issues, recovery goals, and opportunities for resilient policies/actions. Prior to the second meeting, technical leads and participants presented existing and new action steps that should be considered to address the needs and priorities defined during the first meeting. The second meeting focused on the developing and distinguishing actions that were identified s having the highest potential for impact within each working group, taking into consideration possible interdependancies. During the third meeting, participants refined the proposed recommendations and applied the resilience lens to those actions in order to guide the final recommendations.

The process of developing recommendations for the resilient recovery of Puerto Rico entailed the following analysis criteria of the Island's unique context:

Housing



The urban/rural divide on the Island, recognizing that resilient economic development opportunities for rural communities are as essential as the opportunities in the Island's urban centers.



How recommended actions reflect on resilience qualities (e.g., inclusive, integrated, flexible, redundant, reflective, resourceful, robust).



Issues of equity, transparency, and sustainability.



The variety of ecosystems present in the Island and the challenges and opportunities they each present. It is imperative, for example, to consider the state of adaptive capacity of coastal and inland forest ecosystems to continue to provide ecosystem services in a changing climate.



The social, economic, and geographical realities of Puerto Rico (e.g., Is the recommendation fundable? Is it culturally acceptable? Is it politically feasible?).



A recognition that Puerto Rico is bounded by water, and its associated exposure to climate hazards, its dependency on a specialized industry, its overreliance on importing of goods and limited natural resources, and the high cost of infrastructure.













February



REIMAGINA PUERTO RICO'S PARTICIPATORY PROCESS. THE DIVERSE SET OF MEETINGS AND DISCUSSIONS HELD BETWEEN THE PUBLIC SECTOR ADVISORY GROUP, THE WORKING GROUPS, AND THE COMMUNITY FOCUS GROUPS HELPED CREATE AND VALIDATE THE INFORMATION PRESENTED IN THIS REPORT.

The Community Outreach and Engagement Process was divided into two sets of activities held in six distinct regions of the Island. These regions were strategically selected to cover all areas of the Island, including the urban/rural divide and other geographical, social, and cultural regional characteristics.

The first activity was the Youth Participatory Photography, which was held in six distinct schools across the Island (one in each region). During this activity, students had the opportunity to identify assets they believe are essential to maintain and improve their communities. The objective of the Youth Participatory Photography activities was to allow students to identify, through photography, remarkable resilience and recovery challenges in their communities. This process included a forum where students could display and present their photos. During this forum family members and other residents commented and elaborated on the importance of changing or improving specific aspects of their communities after the hurricanes.

The second Community Outreach and Engagement activity of community engagement consisted of



Community Focus Groups in each of the six regions. Two additional Focus Group Sessions were conducted, one for philanthropic and non-governmental organizations and another for the Puerto Rican diaspora in Orlando, Florida, where most Puerto Ricans have migrated to in the past year. The objective of the Focus Groups was to incorporate their voice in the development of the report, understand the Island-wide perspectives on recovery and resilience, and validate the Working Groups' outcomes through participatory activities and prioritization processes. During these meetings, participants expressed

their issues and concerns regarding the hurricane impacts, they talked about opportunities to consider, and they validated the results from the Working Groups. Their outputs were used to elaborate and refine the needs, goals, opportunities, and actions of each Working Group.

The information derived from the Community Outreach and Engagement Process formed an integral part of the discussions in the Working Group meetings, and, ultimately, served as the basis for the recommendations presented in this report (see Figure 8).





