NATURAL RESOURCES
COMMITTEE DEMOCRATS
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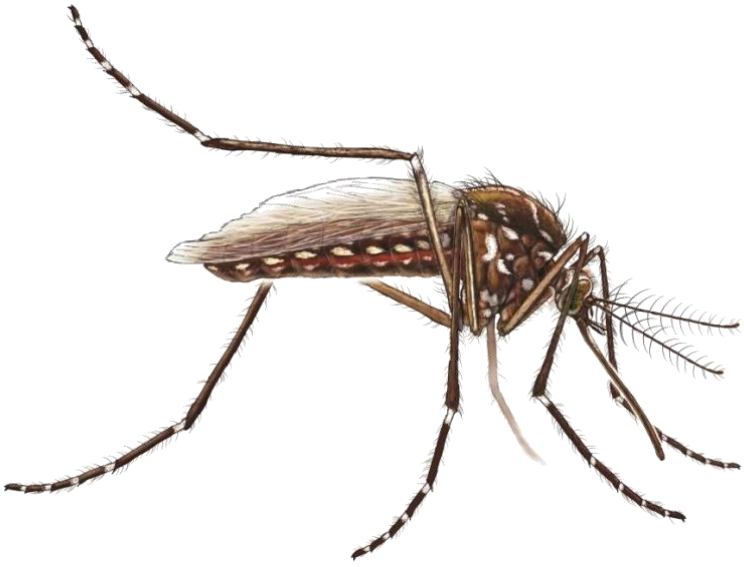
BRUISED AND BITTEN:

How major spending cuts in Puerto Rico have left the island vulnerable to Zika



A report by the Democratic staff of the House Committee on Natural Resources

NOTE: This report has not been officially adopted by the Committee on Natural Resources and may not necessarily reflect the views of its members

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Executive Summary

Puerto Rico is in the midst of a severe debt and economic crisis. The government owes creditors $72 billion in debt and residents are leaving the island in droves to seek better opportunity on the mainland. In an attempt to climb their way out of debt and satisfy certain investors like hedge funds, the government of Puerto Rico has imposed major spending cuts to agencies, including the Puerto Rico Department of Health. Nevertheless, the debt has grown and the economic crisis has worsened.

The Puerto Rico Department of Health now faces a rapidly growing outbreak of Zika, a mosquito-borne virus that is associated with severe to fatal birth defects and Guillain-Barré Syndrome, a rare neurological condition. The rainy season that started in April is creating the ideal breeding ground for the mosquito, increasing the demands on the Department of Health. The virus also stands to overwhelm Puerto Rico's health care system which has been crippled by inadequate federal Medicaid funding for years. If uncontrolled, Zika is estimated to infect one out of every four Puerto Rico residents within the year, erode one of the island's strongest economic sectors, and drive the spread of the disease to the mainland.

When drastic cuts are used to shrink public spending, the consequences on the public's health are disastrous. In the end, it is likely that the cuts will cost more money than they save. As Congress considers legislation to help Puerto Rico emerge from this humanitarian crisis, further austerity measures must be off the table. A robust public health infrastructure and health care system are essential in fighting threats like Zika and recovering the economy.

Aedes aegypti cover art illustrated by Sean Vidal Edgerton

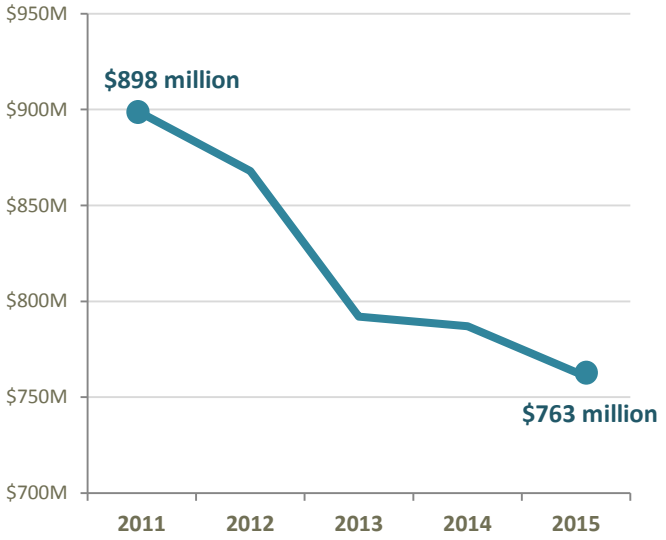
Deep budget cuts are taking a toll on Puerto Rico

Dramatically reduced public spending has left the island vulnerable

Slow economic growth and increasing debt have recently created a humanitarian crisis in Puerto Rico. The government currently owes creditors $72 billion in addition to a $46 billion pension liability. Unemployment is up to 12% and the poverty rate is 45%, more than twice the rate in any U.S. state.[2] Making matters worse, the population is dwindling as young, working-age residents move to the mainland for better economic opportunity.[3]

To try to pay their debts and satisfy aggressive investors including hedge funds, the Puerto Rican government has enacted **severe austerity measures** including major budget cuts and tax increases. In the past two years alone, over 80 schools were closed, public workers' benefits were slashed, and the sales tax was increased to 11.5%, the highest in the United States.[4-7] Important, widely-needed services have been drastically limited or eliminated. These measures have done little to improve Puerto Rico's debt and have been counterproductive to revitalizing the economy.[8]

Figure 1. Puerto Rico Department of Health's annual budget, by fiscal year (not adjusted for inflation)



Source: http://www2.pr.gov/presupuestos/Pages/PRESUPUESTOSANTERIORES.aspx

While the island suffers, a new threat is looming. The Zika virus is spreading across the island.

With the onset of a new virus, the island is turning to the Puerto Rico Department of Health for help. As the public health authority on the island, the Department is responsible for detecting and monitoring diseases, preventing the spread of disease, raising awareness of healthy behaviors, and preparing for and responding to emergencies.[9] The Department of Health is Puerto Rico's best hope for protecting the island's families from this emerging disease.

The Department of Health has not escaped the austerity cuts. From 2011 to 2015, the Department's annual budget was slashed by 15% (see Figure 1).[10] The Department of Health has been making do with less, but now they are being asked to do much more. Without question, further cuts would greatly compromise the Department's ability to respond to urgent health needs like Zika.

Four hospitals have declared bankruptcy and others have reduced capacity.

In 2010-2012, more than 4,000 health professionals left the island.

Puerto Rico's health care system is also in jeopardy. Medicaid and Medicare reimbursements for care have been slow to be paid, if they are paid at all, causing health care systems to close and medical professionals to leave the island.[11]

Is more austerity the solution to Puerto Rico's humanitarian crisis?

Legislation is now pending before the House of Representatives to address the debt crisis in Puerto Rico. A primary component is the creation of an oversight board. The handful of people on the oversight board would have the authority to make major fiscal decisions in an effort to steer the island toward recovery. Unfortunately, similar control boards elsewhere have done so by imposing more budget cuts. Given the suffering Puerto Rico has already endured, further austerity could have tragic consequences, especially as Zika gets a foothold on the island.

Across the globe, austerity hurts our health

Whether near or far, the lesson is the same

Puerto Rico's crisis is not the first time leaders have used extreme budget cuts to try to dig out of major debt. When this happens, public health agencies and publicly-funded healthcare systems are usually on the chopping block. Rather than saving money, these cuts have disastrous effects on the government's ability to detect, prevent, and control the spread of disease. The consequences are dire, both to the public's health and to the financial stability of the government. The following are just two well-documented examples that illustrate how devastating the effects of austerity on health can be.

Greece:

Malaria and HIV find opportunity in a drastically underfunded public health system

Greece's economy has been in crisis since 2009. To reduce spending, the Greek Ministry of Health implemented several austerity measures from 2010-2012, including wage reductions, layoffs, and hiring freezes for public health personnel and healthcare workers. Hospitals were closed or merged, copayments were increased, and patient services were reduced.[12]

From May to November 2011, in the midst of the budget cuts, an outbreak of malaria occurred in southern Greece. Forty cases were recorded in people that had not traveled to any endemic countries. Until that time, the most recent recorded case of malaria was in 1974. Officials pointed to the drastic reduction in vector control activities following the austerity cuts as the reason for the outbreak.[13]

HIV prevention programming also experienced major cuts. In 2010, the number of clean needles and condoms that were distributed to injection drug users was reduced by over 30%. By 2011, there was a 57.2% overall increase in HIV-1 diagnoses. Among injection drug users specifically, HIV-1 diagnoses increased by 1,507%.[14]

Flint, Michigan:

Cheaper water opens the gate to lead poisoning and Legionnaire's disease

In 2011, Michigan declared the city of Flint to be in a local government financial emergency. An emergency manager was empowered to make decisions that would guide the city back to fiscal sustainability.

One of the manager's decisions was to change the city's water source which would save $5 million over two years.[15] In April 2014, the city stopped purchasing treated water from Detroit and began sourcing water from the Flint River. After receiving complaints about the water quality, the manager was given the opportunity to switch the water source back, but refused to do so.[16]

In early 2015, it was discovered that the newly-sourced water from the Flint River was corrosive, causing unsafe levels of lead to be leached from the aging pipe system. Thousands of children were exposed to lead, which can slow a child's growth, reduce intelligence, and cause aggressive behavior, even at low levels.[17] In Flint, the water in some homes had lead levels ten times the limit set by the World Health Organization.[18,19]

Adding to the crisis, an outbreak of Legionnaire's disease, a waterborne disease, was detected in early 2016. A total of 87 cases, 10 of them fatal, were reported, making the outbreak one of the biggest of its kind in the past decade.[20]

Zika is a global public health emergency

The virus presents new and serious health threats in the Americas

As of late April 2016, the Zika virus has infected people in 66 countries and territories.[21] Zika is mainly spread through the bite of the *Aedes aegypti* mosquito which lives in tropical and subtropical climates on nearly every continent.[22] It is the same mosquito that carries dengue and chikungunya viruses. Although the virus is primarily transmitted from mosquito to human, men can also spread Zika to other people through sexual contact.[23]

Most people who get Zika do not have symptoms and therefore may not even know that they have been infected.[24] People with symptoms generally report a fever, rash, joint pain, or red eyes (conjunctivitis). Once a person is infected by Zika, he or she will probably not be infected again.[25] To date, there is no known cure for Zika and a vaccine has yet to be developed.[26]

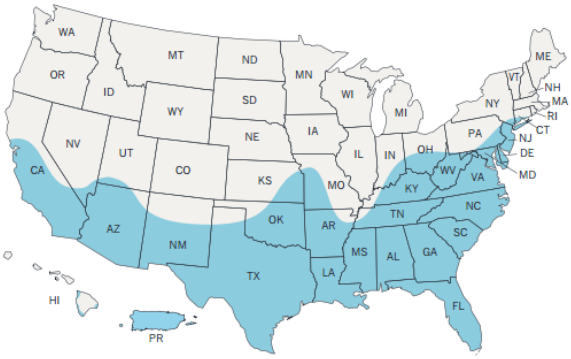


Figure 2. Estimated U.S. range of *Aedes aegypti*

Source: http://www.cdc.gov/zika/vector/index.html

Although symptoms of Zika infection are mild, there are serious concerns about being infected with Zika during pregnancy.[27]

Microcephaly in a newborn

Source: http://www.cdc.gov/ncbddd/birthdefects/microcephaly.html

Microcephaly is a birth condition in which a baby has a significantly smaller than typical head size. Studies show that Zika infection during pregnancy can result in giving birth to a baby with microcephaly.[28] Microcephaly is often an indication that the fetus' brain did not develop properly in the womb. Babies with microcephaly can have a range of health problems, such as intellectual disabilities and vision and hearing loss. In severe cases, microcephaly can be life-threatening.[29]

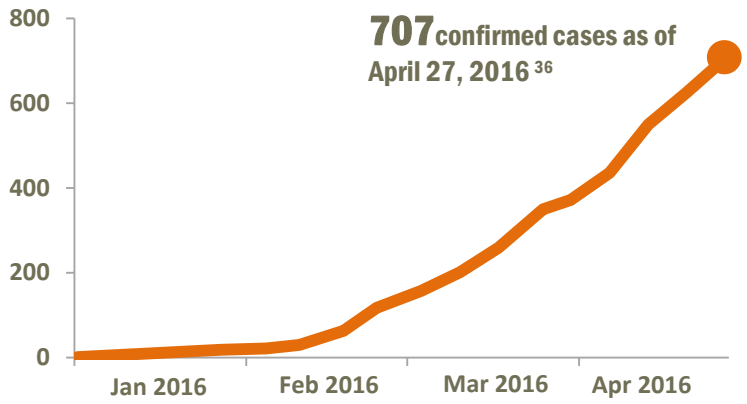
Even in cases in which a baby is not born with microcephaly, there is evidence for an increased risk of other serious health effects, such as poorly developed brain structures, hearing or vision defects, or impaired growth.[30,31] Indeed, microcephaly may only be the tip of the iceberg of the health issues that Zika can cause.

Guillain-Barré syndrome is a serious health concern among adults who are infected with Zika. Guillain-Barré syndrome is an extremely rare neurological disorder that can cause temporary, yet potentially fatal paralysis. An increase in the disorder by up to twenty-fold has been reported among Zika-infected patients in affected countries or territories.[32]

Diagnosing Zika: It's harder to manage what we can't see

A critical part of monitoring any disease is having an accurate system for diagnosing and reporting the disease. Tracking Zika has been a challenge because many people do not have symptoms and therefore do not go to the doctor. In addition, because Zika is a newly emerging virus, accurate diagnostic tests that are able to distinguish Zika from dengue and chikungunya are still being developed and refined.[33] Some important ways of slowing the spread of Zika—stopping human to human sexual transmission, preventing mother to child transmission during birth, and treating homes near the infected—rely on knowing who is infected.

In Puerto Rico, Zika is spreading quickly



Source: http://www.salud.gov.pr/Sobre-tu-Salud/Pages/Condiciones/Zika.aspx

The first locally-acquired case of Zika infection in Puerto Rico was reported December 31, 2015.[34] Since then, the number of reported cases has increased rapidly. On February 5, 2016, Governor García Padilla declared Zika a public health emergency in Puerto Rico.[35]

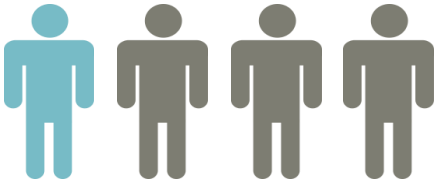
Among the 707 cases confirmed by late April, 89 were pregnant women.[36] Pregnancy due dates for these infected women begin in late summer of 2016.

The first Zika-related death in Puerto Rico was confirmed in late April.[37]

Mosquitos will thrive during Puerto Rico's current rainy season

The *Aedes aegypti* mosquito loves warm, damp climates. Puerto Rico's rainy season, which typically lasts about half the year from April to November,[38] creates the mosquito's ideal breeding ground. Puerto Rico has already seen the rainy season fuel large-scale epidemics of dengue and chikungunya, two viruses carried by the same mosquito.

Unlike dengue and chikungunya, however, Zika is new to the island. This means that people in Puerto Rico have not yet developed immunity to the virus. The potential for Zika to sweep across the island is therefore even greater.



CDC estimates that nearly 1 out of 4 Puerto Rico residents will be infected with Zika within a year.[39]

Based on CDC's estimate, it is possible that nearly **875,000** of Puerto Rico's 3.5 million residents will be infected with Zika within just one year. Even more alarming, there are approximately 34,000 newly pregnant women each year in Puerto Rico.[40] If they are not adequately protected, the number of infected pregnant women could be close to 8,500.[41] In the face of a health crisis like Zika, Puerto Rico needs a robust public health infrastructure, not one that has been weakened by severe budget cuts.

Underfunded and ignored

Impoverished communities in Puerto Rico did not have the resources to implement preventive measures as Zika established itself on the island.[42,43]

Unused tires collect water, making the perfect mosquito breeding grounds. Lacking the means to properly dispose of them, hundreds of thousands of unused tires sat on the island.[44]

About half of households in Puerto Rico are connected to septic tanks, thousands of which were never properly sealed to prevent mosquitos from breeding.[45]

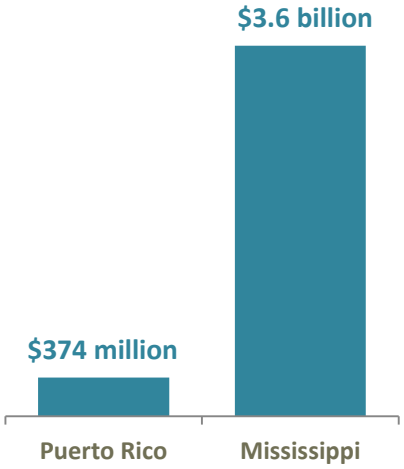
Many public schools, public housing, and even hospitals do not have air conditioning or proper window screens, leaving buildings open to mosquitos.[46]

Puerto Rico's health care system can't afford Zika

The virus could cause a financial tidal wave on the island

Puerto Rico's health care system is living on borrowed time. Over one third of the island's massive $72 billion debt is estimated to be attributable to health care spending. A major contributor is inadequate and unfair Medicaid funding.[47,48]

Figure 3. FY2014 federal Medicaid funding



Sources: http://www.crs.gov/;http://kff.org/medicaid/

Because of the poverty rate on the island, nearly half of Puerto Rico is enrolled in Medicaid, more than twice the rate of the U.S. states.[49] However, the percentage of Medicaid that is federally funded is disproportionately low; Puerto Rico's Medicaid is only 55% federally funded, while low income states are up to 74% federally funded.[50] Even more damaging is the cap on federal funding that Puerto Rico and the other U.S. territories must bear. This means that federal funds pay their share of Medicaid expenses only up to a limit. After that, the remaining balance is paid by the Puerto Rican government in full.[51]

Figure 3 illustrates how drastic the funding disparity between Puerto Rico and the states can be. Mississippi has the highest poverty rate among the states and has approximately 700,000 Medicaid enrollees.[52] By comparison, Puerto Rico has 1.4 million Medicaid enrollees (twice the number of Mississippi), yet gets about a tenth of the federal Medicaid funding that Mississippi receives.[53]

The Affordable Care Act offered Puerto Rico some relief by providing an extra $6.4 billion to use towards Medicaid expenses through 2019.[54] However, that supplemental funding is expected to run out in 2017. After that, Puerto Rico will be forced to drop hundreds of thousands of its residents from coverage.[55]

Making matters worse, the health care related costs of Zika could be astronomical.

If not controlled, Zika stands to wreak havoc on Puerto Rico's broken health care system. Recent research estimates that Zika infection during pregnancy has severe effects, including microcephaly, on 29% of fetuses.[56] With estimated average lifetime costs of $1 million per affected child,[57] the cost of affected babies born in the first year of a Zika epidemic could total over $2 billion. Moreover, the special care needs of these children could push parents and other caregivers out of the workforce.

$2.04 billion

Estimated lifetime cost of babies born with microcephaly or other serious birth defects in one year of a Zika epidemic in Puerto Rico[58]

Another potentially major expenditure includes both the direct and indirect costs related to Guillain-Barré syndrome, which is expected to affect 24 of every 100,000 people infected with Zika.[59] The average lifetime cost of an episode of Guillain-Barré is $319,000 per person.[60]

$67 million

Estimated lifetime cost of patients diagnosed with Guillain-Barré syndrome in one year of a Zika epidemic in Puerto Rico[61]

Prevention of Zika in Puerto Rico is no simple task

Controlling an unprecedented outbreak will require unprecedented resources

Preventing and controlling the spread of Zika is neither cheap nor easy. Zika infection is largely asymptomatic making it difficult to track and prevent further transmission. In addition, the population has never been exposed to Zika which makes people even more vulnerable. The drastic cuts to public spending over the past few years have left Puerto Rico ill-equipped to handle a response of this magnitude.

Effectively addressing Zika requires a comprehensive, multi-component strategy. At a minimum, efforts must include 1) Monitoring & Surveillance, 2) Public Education, and 3) Mosquito Control.[62]

Monitoring & Surveillance

Tracking the spread of disease is a critical part of any public health response. Having accurate data enables responders to know where the disease is affecting people the most and whether there are certain risks associated with the disease. For Zika, two types of monitoring are needed.[63]

Monitoring Zika infections: Understanding who is getting Zika requires skilled staff and resources to perform diagnostic tests. Puerto Rico currently has the capacity to perform 20,000 diagnostic tests for Zika per year, but CDC estimates that 100,000 tests will be needed.[64]

Monitoring pregnant women: Because of the risks, pregnant women need close monitoring and frequent testing. CDC is helping Puerto Rico develop a Zika pregnancy registry, but funds will be needed to maintain the system long-term.[65] Multiple diagnostic tests, including amniocentesis, for the 34,000 newly pregnant women each year will also be crucial.[66]

Public Education

Public education helps people, especially pregnant couples, learn how to best protect themselves from Zika. Healthy actions include installing screens, applying insect repellent, and using condoms to prevent sexual transmission. Social media, mass media, and small media (e.g., brochures and fact sheets) all require significant funding and research for an effective public education campaign.

Mosquito Control

Reducing the mosquito population and protecting people, especially pregnant couples, from mosquito bites is the cornerstone for preventing the spread of Zika. Unfortunately, the *Aedes aegypti* mosquito is particularly difficult to control (see box below). As practitioners and researchers have already seen with dengue and chikungunya, there is no single solution to controlling this mosquito; multiple approaches will be required for success.[67,68]

A multi-component strategy is expensive. For example, purchasing screens for public housing and schools alone is estimated to cost **$110 million**.[69] Proper sealing of septic tanks is estimated to cost **$140 million**.[70]

New and emerging methods for mosquito control, such as genetically-modified mosquitos, have received significant attention recently. It should be noted however, that these methods are still undergoing trials and would likely not be ready for use in the near future.[71]

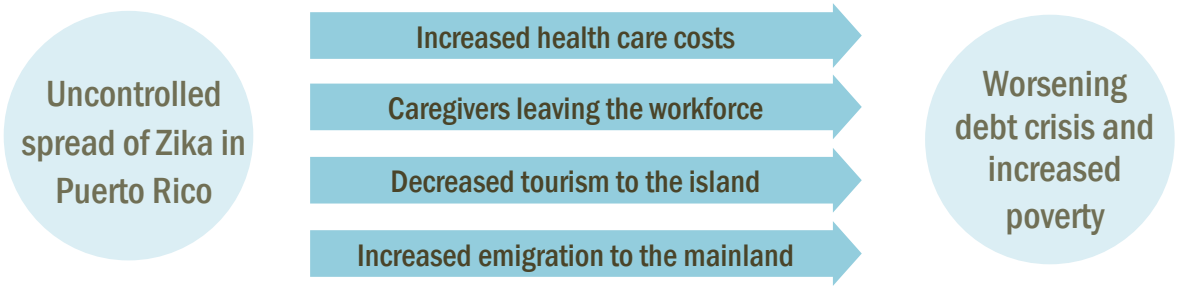
Controlling *Aedes aegypti* is a major challenge:[72]

- It breeds in standing water and only needs a bottle cap of water to lay eggs.
- It prefers to be indoors and around people, especially in dense urban areas.
- It bites mostly during the day, making mosquito bed nets less effective.
- It has shown resistance to permethrin, the most widely used insecticide.[73]

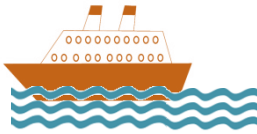
Pay now or pay later (and greater)

In the end, funding cuts to the Department of Health cost the U.S. taxpayer

In early 2016, Puerto Rico was forced to request assistance from CDC to mount a Zika response. The CDC has since deployed many staff and major resources to the island.[74] The President has proposed a $1.9 billion supplemental funding package for Zika that directs $225 million towards monitoring and mosquito control efforts in Puerto Rico.[75] By comparison, the cuts to the Puerto Rico Department of Health from 2011 to 2015 totaled about $135 million. As was the case in Flint, Greece, and others, the short-term savings from Puerto Rico's funding cuts have resulted in long-term losses, the burden of which is falling on taxpayers. If these losses are not reinstated, the consequences will be even greater.



Uncontrolled spread of Zika in Puerto Rico also increases the likelihood of Zika spreading to the mainland. Each year, approximately 2.9 million U.S. tourists visit Puerto Rico, largely on cruise ships.[76] Tourists may bring the virus back with them and accelerate its spread in the states. In addition, the accelerating rate of emigration out of Puerto Rico could bring approximately 21,000 new Zika cases to the mainland each year, or 58 cases a day.[77]



To help Puerto Rico fight the spread of Zika, the following actions are recommended:

End austerity cuts.

Austerity in Puerto Rico is counterproductive. Debt is still unpayable after years of drastic cuts and, as other examples from across the world have shown, these cuts put the public's health at risk. If pending legislation to authorize an oversight board to implement debt-reducing measures is approved, further cuts to public spending must be avoided at all costs.

Support health care in Puerto Rico.

With 1.4 million enrollees, Medicaid is the largest insurer on the island.[78] When funding from the Affordable Care Act runs out, Puerto Rico will be forced to make tough decisions that affect the residents in greatest need. Zika will significantly increase the demand for health care, putting the system under greater stress. The federal contribution to Medicaid must reach parity with comparable states to relieve undue financial pressure on Puerto Rico's healthcare system.

NOTES

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