

# Post-Hurricane Maria Exodus from Puerto Rico and School Enrollment in Florida

## RESEARCH BRIEF

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**Hurricane Maria's impact on Puerto Rico and its population has led to a significant exodus to the United States, especially to the state of Florida. Prior estimates of the magnitude of this exodus have been based on movement of passengers or statistical projections based on recent migration trends from Puerto Rico to the United States. In this report, we use post-Hurricane Maria school enrollment data from Florida school districts to assess the population flows from Puerto Rico. School enrollment data is considered a more reliable indicator of permanent migration than other data currently available.**



According to our survey of school districts and data provided by the Florida Governor's Office, 10,324 Puerto Rican students enrolled in Florida school districts after September 20, 2017. School enrollment data indicates that just three months after the Hurricane Maria catastrophe the exodus of Puerto Ricans to Florida has already reached the lower bound predictions of our prior study.<sup>1</sup>

In addition, we examine the impact of depopulation on school enrollment in Puerto Rico. The findings of this study clearly indicate that the hurricane significantly affected both school systems. For Florida, the massive, unexpected enrollment of Puerto Rican students throughout the state challenges school districts to figure out how to provide support services for the multiple needs of recent arrivals. For Puerto Rico, the challenge is how to cope with a drastic decline in enrollment and school closings.

In the decades prior to Hurricane Maria, Florida became the preferred destination of Puerto Rican migrants. According to the most recent data available from the U.S. Census Bureau,

migration from Puerto Rico to Florida increased significantly from less than half a million at the turn of the new millennium to 1,067,747 by 2016. The increase in Puerto Rican migration from Puerto Rico to Florida and more generally to the United States accelerated after the stagnation of the island's economy and the concomitant impact of the fiscal crisis on employment.

In this study we use school enrollment data as an indicator of permanent Puerto Rican migration to Florida. We assume that families that enroll their children in the state's school system are more liable to stay over a longer period of time or to relocate permanently than families that have a shorter time horizon in mind and chose not to enroll their children in schools.

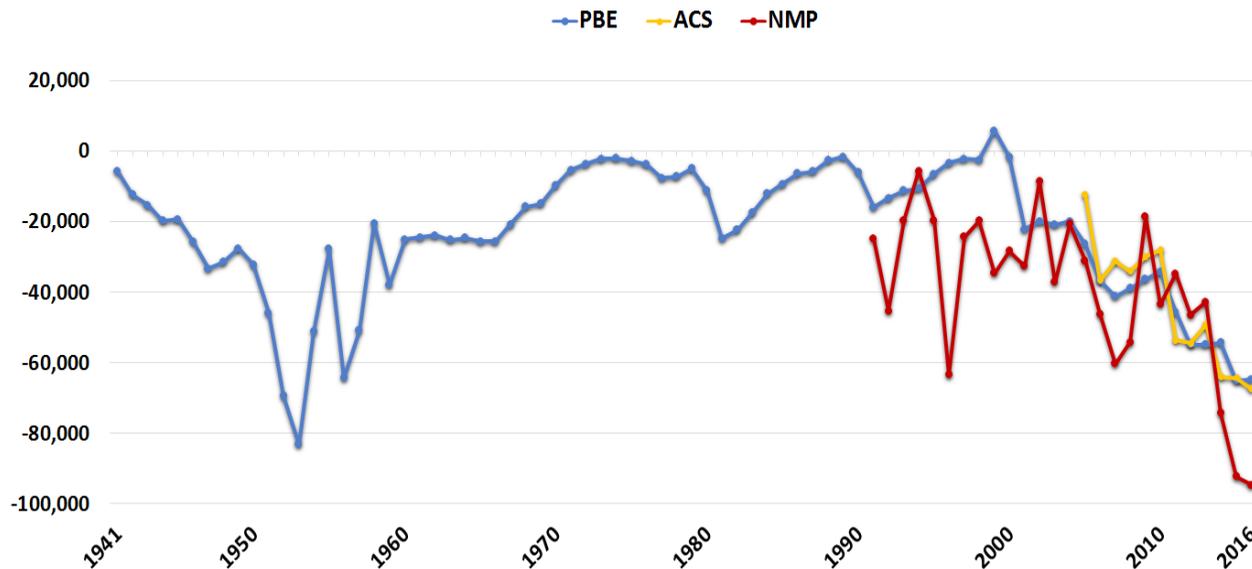
School enrollment is the only reliable observable indicator of migration at this point. Three months after Hurricane Maria made landfall in Puerto Rico alternative data sources are not available or are too volatile. Social scientists—such as demographers, sociologists and economists—rely on a few

methods and data sources to estimate Puerto Rican migration. These are:<sup>2</sup>

1. *Demographic balancing equation (PBE)*<sup>3</sup> using data from the Puerto Rico Department of Health and the U.S. Census Bureau Population Estimates.
2. *Net Movement of Passengers (NMP)* using data from the Bureau of Transportation Statistics.
3. Data from the *American Community Survey (ACS)* of the U.S. Bureau of the Census.

As shown in figure 1, these measures tend to converge over long periods of times, though the first two measures show more volatility than the estimates derived from the American Community Survey (ACS). However, using these data sources and methods to estimate migratory flows from the island can be problematic because they are typically published only on an annual basis. The PBE relies on population, mortality and birth data that are typically reported annually for the prior year. Similarly, the ACS data is based on a random survey of the population, and that data is published about a year after it is collected. Further affecting the efficacy of these measures is the fact that migration data for the post-Hurricane Maria period will be combined with

**Figure 1. Estimating Migration Flows from Puerto Rico to U.S., 1941-2016**



Source: 1941-2016 Department of Health and U.S. Census Bureau Population Estimates; 1991-2016 Bureau of Transportation Statistics; 2005-2016 American Community Survey.

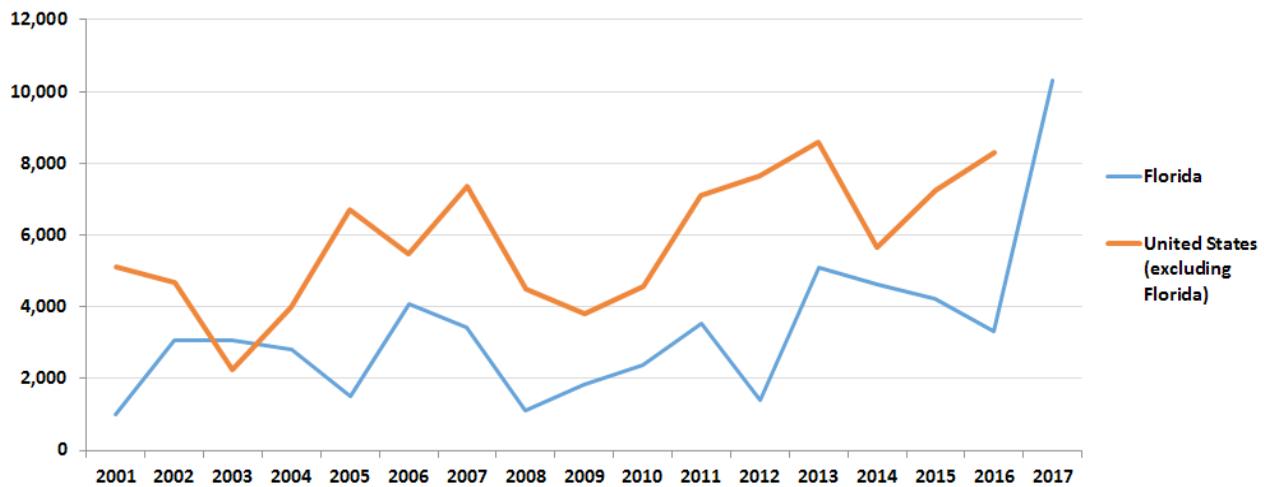
the rest of the year to produce estimates. This means once the data is combined with the entire year's information, it will be difficult to pinpoint which part of the migration was a direct result of the hurricane. And while the NMP data is an indirect method of estimating migration it typically would lag three months or more to be more reflective of long term stays abroad since a significant portion of passenger movement is reflective of short periods of traveling.

By comparison to the aforementioned alternative sources of data, school enrollment is an indicator of a more permanent stay. However, school enrollment is reflective of only a seg-

ment of the population—namely, those families and households with school-age children (5 to 17 years old). Despite such limitation, school enrollment data is currently available and could be collected periodically to gage the Puerto Rican exodus to Florida and, more importantly, used to address the adaptation challenges that affect the youth cohort of the post-Maria exodus.

Figure 2 depicts the enrollment of Puerto Rican children that migrated stateside and were enrolled in school. The flow of students to Florida school districts are the largest across the country and oscillate from half of the total to even more than

**Figure 2. Puerto Rican Migrant Children Migration to Florida and U.S., 2001-2017**



Source: 2001-2016 American Community Survey, U.S. Census Bureau

all other school districts in the country combined. The number of Puerto Rican children who migrated from Puerto Rico to Florida’s school districts between 2001 and 2016 ranged as low as 1,016 annually to as high as 5,000. As shown in figure 2, school enrollment of Puerto Rican migrants to Florida and to other parts of the U.S. mainland peaked in 2006 and the following years as a result of the Island’s fiscal crisis.

## ESTIMATES

Table 1 depicts school enrollment data collected between November 14 and December 5, 2017 by Florida’s school

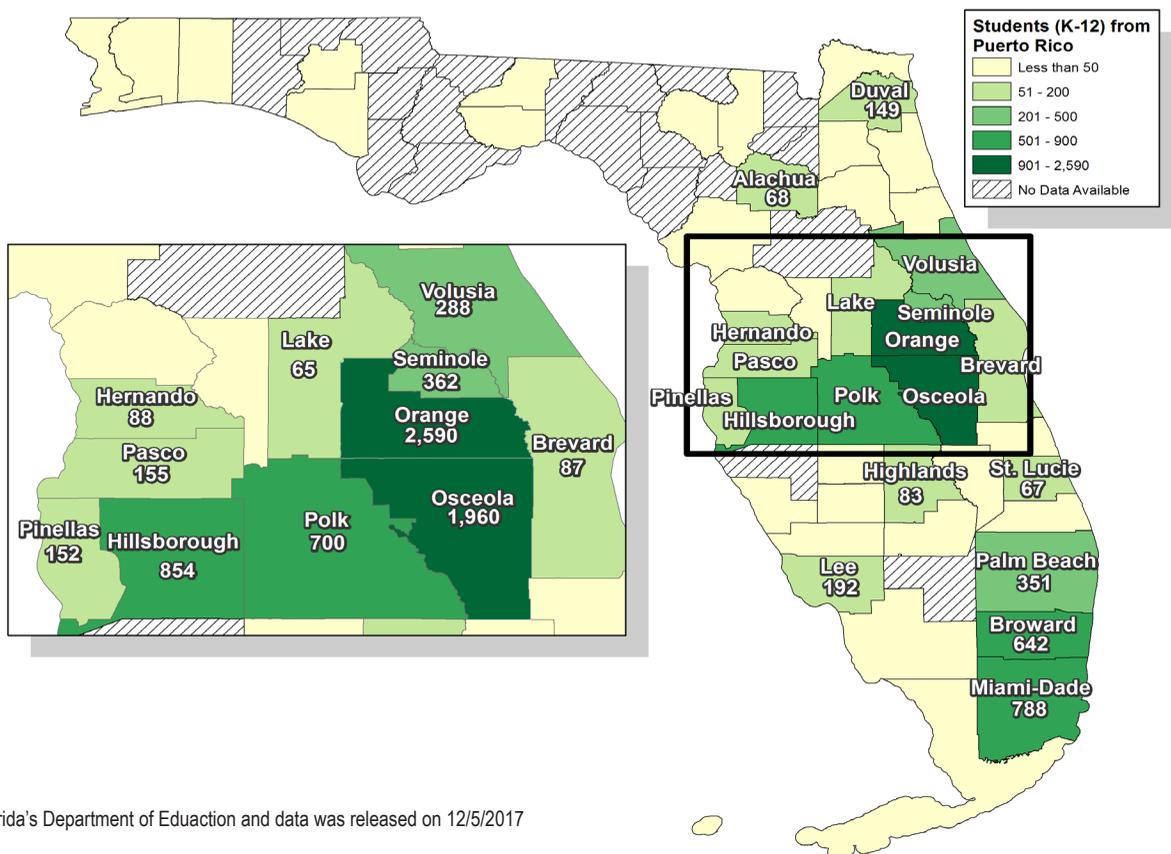
districts. According to our survey of school districts and data provided by the Governor’s Office, 10,324 Puerto Rican students enrolled in Florida school districts after September 20, 2017. To date, this figure represents an increase of 4.9% over the school enrollment level in 2015. Two school districts, Orange (2,590) and Osceola (1,960), account for about half of the total statewide Puerto Rican student enrollments (44.1%). As indicated in figure 3, post-Hurricane Maria Puerto Rican students were concentrated in Central Florida and to some extent in Southern Florida school districts.

**Table 1. Puerto Rican Student Enrollment in Florida School Districts**

School Districts	K-12 Students (2015)	Post-Maria Increase	% Increase	Date Gathered
<b>Statewide</b>	<b>209,270</b>	<b>10,324</b>	<b>4.9</b>	
Orange	36,143	2,590	7.2	12/05/17
Osceola	19,991	1,960	9.8	12/05/17
Miami-Dade	19,010	788	4.1	12/05/17
Broward	15,940	642	4	12/05/17
Polk	10,467	700	6.7	12/05/17
Hillsborough	23,661	854	3.6	12/05/17
Seminole	8,146	362	4.4	12/05/17
Palm Beach	9,824	351	3.6	12/05/17
Florida Virtual School	NA	331	NA	12/05/07
Volusia	6,630	288	4.3	12/05/17

Source: Florida’s Department of Education and telephone survey of selected school districts.

**Figure 3. Post-Hurricane Maria Puerto Rican Student Enrollment (K-12)**



Source: Florida's Department of Education and data was released on 12/5/2017

In a prior study<sup>4</sup> we estimated that during the year following Hurricane Maria between 40,998 and 82,707 Puerto Ricans would migrate to Florida, including between 9,666 to 15,408 school-age (5 to 17 years old) children. The school enrollment data we have presented in this study indicates that just three months after the Hurricane Maria catastrophe, the exodus of Puerto Ricans to Florida has already reached the lower bound predictions of the prior study for school-age children.

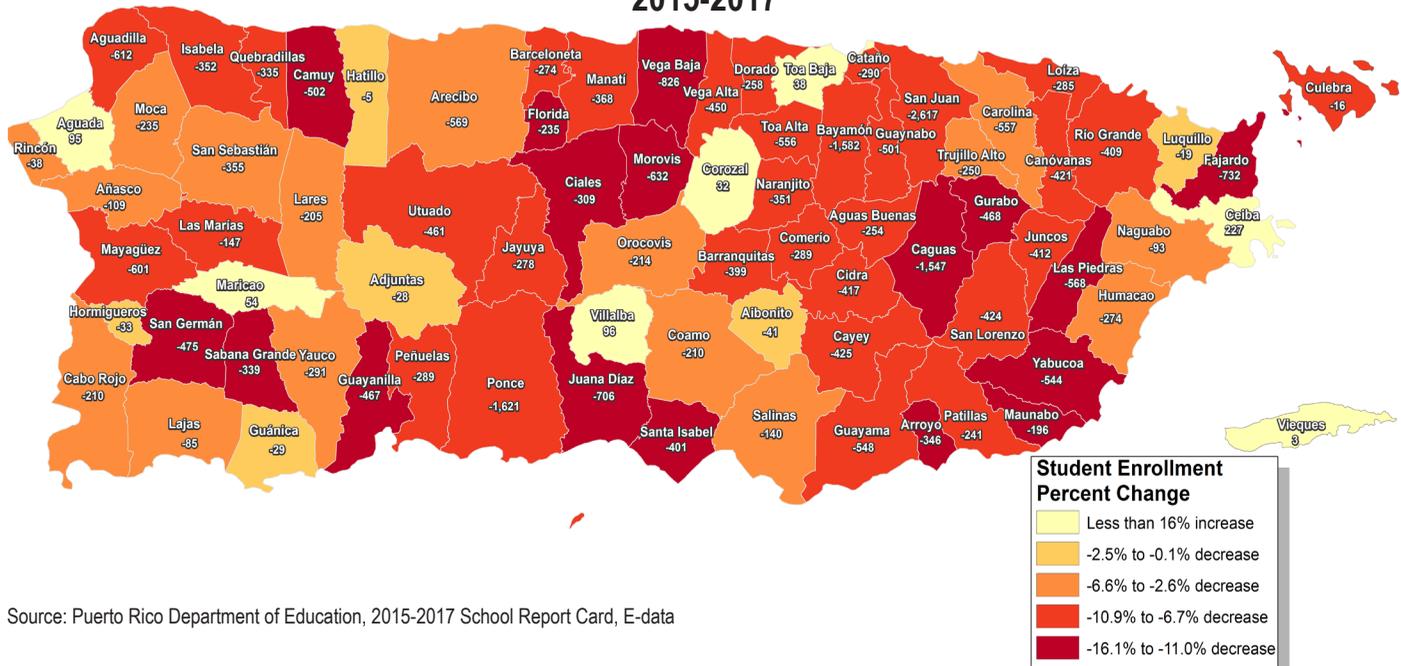
### DEPOPULATION AND SCHOOL ENROLLMENT IN PUERTO RICO

The exodus of Puerto Rican children is having a devastating effect in Puerto Rico. During the last six years prior to the storm, over 10,000 students migrated to the United States (about one-third of those enrolled in Florida schools). According to the Puerto Rico Department of Education, student enrollment declined from 394,278 in 2015 to 365,057 in 2017, a percent change of -7.4 in a span of 3 years. School enrollment decline was apparent in the Island's highly

populated municipalities: San Juan (-2,617), Ponce (-1,621), Bayamón (-1,582), and Caguas (-1,547). As shown in figure 4, some of the Island's rural municipalities showed the highest declines, in terms of percent change: Fajardo (-16.1%) followed by Santa Isabel (15.4%), Guayanilla (14.5%), Las Piedras (14.3%), and Arroyo (-13.2%).

As of December 20, 2017, a total of 1,093 out of 1,272 public schools<sup>5</sup> have re-opened since Hurricane Maria hit the Island. However, some schools have opened on a limited daily schedule, from 7:30 a.m. to 12:30 p.m., due to limited electricity.<sup>6</sup> Schools that remained closed after the hurricane's landfall are mostly located in the Island's coastal municipalities. Public schools in Loíza (43%), Las Marías (40%), Sabana Grande (29%), Cabo Rojo (20%), and Río Grande (20%) showed higher school closure rates relative to other schools.

**Figure 4. Percent Change of Puerto Rico's K through 12 Student Enrollment by Municipios, 2015-2017**



Source: Puerto Rico Department of Education, 2015-2017 School Report Card, E-data

## SUPPORT SERVICES FOR PUERTO RICAN STUDENTS IN FLORIDA

In the aforementioned prior study, we estimate that 22,710 to 42,771 school-age children will migrate from Puerto Rico to the United States with their families, with the Florida segment representing about half of the national total. These children will be enrolled in public and private schools across the country requiring enrollment and transfer services, English as a second language or bilingual education, after-school programs, and counseling. Many of these students have already tested at low levels of English proficiency. These children will also need pediatric care, and many of their parents will need access to translation and culturally-sensitive health care services.

Anecdotal data suggest that high school juniors and seniors in particular require special care and guidance to make sure they can transfer required courses in order to be able to graduate. The state of Florida has strict course requirements and seniors must pass standardized tests before graduating. These students require immediate academic counseling, guidance in choosing the courses required for graduation and preparation for upcoming standardized tests. For these students, coordination with Puerto Rico-based higher educational institutions in Central and South Florida to provide transition programs to college will be highly beneficial. Not only do these universities specialize in bilingual programs, but they have the capacity to develop programs to support high school seniors completing state requirements for graduation.

## NOTES

1. Edwin Meléndez and Jennifer Hinojosa, Estimates of Post-Hurricane Maria Exodus from Puerto Rico, Centro RB2017-01, Issued October 2017.
2. An additional data source, the Survey of Travelers (or Encuesta Sobre Información del Viajero in Spanish) was conducted by the Puerto Rico Planning Board (PRPB) from 1982 to the 1988 and from 1991 to 2002. The main objective of the PRPB survey was to collect information about the volume and characteristics of travelers from Puerto Rico to the United States. The so called "ramp" survey was based on a sample drawn from all the commercial flights leaving or entering Puerto Rico from the Luis Muñoz Marín International Airport in San Juan, and subsequently from the Rafael Hernández airport in Aguadilla. This study was discontinued for lack of funding. Researchers have also used the Current Population Survey (CPS) to address Puerto Rican migration. The CPS is a monthly survey of about 55,000 households conducted jointly by the Bureau of Labor Statistics (BLS) and the Census Bureau. As a source of information about Puerto Rican migrants to the United States it has a relatively small sample size and to achieve an adequate sample typically surveys from various years are combined. Of all the available options, the annual ACS and PRCS are the most often used and reliable data source for the study of Puerto Rican migration.
3. Demographic balancing equation is defined as  $P2 = P1 + (B - D) + (I - E)$ , where  $P2 = \#$  of individuals in a population at time 1;  $P1 = \#$  of individuals in that population at some later time 2;  $B = \#$  of births in the period from time 1 to time 2;  $D = \#$  of deaths from time 1 to time 2;  $I = \#$  entering as immigrants; and,  $E = \#$  leaving as emigrants.
4. Edwin Meléndez and Jennifer Hinojosa, Estimates of Post-Hurricane Maria Exodus from Puerto Rico, Centro RB2017-01, Issued October 2017.
5. Retrieve (December 21, 2017) from: [http://intraedu.dde.pr/Downloads/Lista\\_de\\_escuelas\\_reabiertas.pdf](http://intraedu.dde.pr/Downloads/Lista_de_escuelas_reabiertas.pdf)
6. <http://www.de.gobierno.pr/noticias/51-noticias/3137-lista-actualizada-de-escuelas-abiertas-tras-el-paso-del-huracan-maria>

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