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Public Health Disaster Research in U.S. Territories:

The Effect of School Services Disruptions on Student Educational Outcomes Following Consecutive Disasters in Puerto Rico.

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Project Overview

Objective

To describe how school service interruptions caused by disasters affected students' academic achievement and educational outcomes, especially among vulnerable populations.

Part I

Quantitative analysis of PRDE administrative data



Part 2

Qualitative analysis based on school principals, teachers and social workers interviews

Project: Part 1

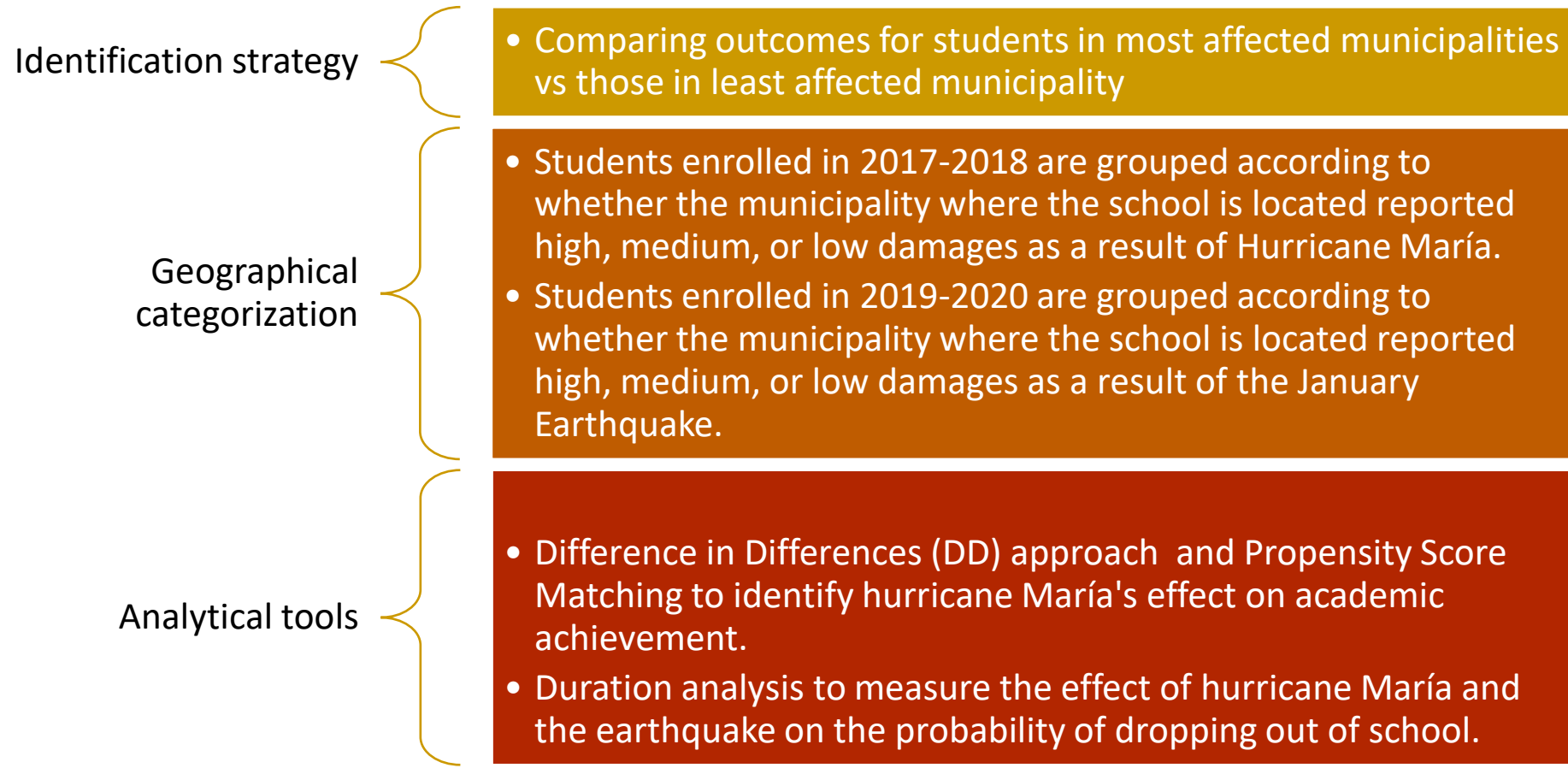
Research Questions

- Has the public school system student vulnerability profile changed after the disasters? Are there any changes in the proportion of students enrolled in special education programs? Are there any changes in poverty prevalence among students at the municipal or regional level?
- Did academic achievement in standardized tests correlate with the severity of Hurricane María's impact across geographic regions? Do any of these effects vary according to personal vulnerability of students or for students whose schools were permanently closed due to the hurricane?
- Does the probability of school attrition post-Hurricane María and post-earthquake vary according to the degree of impact?

Data

- Administrative data from Puerto Rico's Education Department Student Information System that includes socioeconomic variables, standardized test results, and exit codes for all students in the system.

Project: Part 1



Findings

The vulnerability profile of public-school students in Puerto Rico

80% live in families below the poverty level

nearly 30% of public-school students report at least one disability that affects their learning

25% are both impoverished and report at least one learning-related disability.

U-shaped trend in poverty increasing after Hurricane María, especially for highly impacted municipalities

Effect of hurricane María on academic achievement

A 3% relative decrease in standardized test scores is estimated for students enrolled in municipalities highly impacted by hurricane María compared to other groups, partially explained by the length of school interruption.

Vulnerable students in medium and high-impact groups have experienced an additional reduction in test scores of approximately 3% to 4%.

A large (14-20%) relative decrease in academic achievement for students whose schools closed permanently due to Hurricane María.

Effects on student attrition

After María,

- the dropout hazard risk was 18% higher for 8th graders in the medium impact group.
- Contrary to expectations, 10th graders in the high-impact group were less likely to drop out after María.

Following the earthquake,

- the dropout hazard risk for 8th graders in municipalities most impacted by the earthquake is twice as high as for the less affected group.
- Among 10th graders, the dropout hazard risk is significantly higher for students in the medium impact group.

Public health implications of school disruptions

School disruptions affects the families' ability to fulfill basic living needs – specially nutrition needs.

Reduce capacity to attend to mental health needs of the student population, a main concerns after a major disaster.

Disrupt access to services for students with disabilities

Actionable recommendations to reduce school disruptions

Have an active and engaged committee with the participation of parents, school personnel, community leaders, and NGOs to assess disasters and immediately coordinate an emergency response.

Establish emergency plans with private providers of special education services to reduce or eliminate interruptions of critical services during an emergency that forces schools to close.

Establish a protocol that allows school personnel to visit students at home after a disaster to assess their well-being and report to the school emergency response teams.

Equip schools with water tanks, solar panels, and batteries to prepare food for students and families in need.

Actionable recommendations to reduce school disruptions

Promote supportive school environments where students and their families feel safe and cared for during and after a disaster.

Design and implement curricula for each grade level to promote a better understanding of natural hazards and develop social responsibility among students and their families **focusing on risk mitigation.**

School directors must have the authority to make decisions about disaster preparedness and emergency responses at their schools.