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Ma, C., & Smith, T. (2019). *Vulnerability of Renters and Low-Income Households to Storm Damage: Evidence From Hurricane Maria in Puerto Rico*. *American Journal of Public Health*, e1–e7. doi:10.2105/ajph.2019.305438

10.2105/AJPH.2019.305438

downloaded on 2019-12-27

Published online ahead of print December 18, 2019

AJPH

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natural disasters is more prevalent in areas with stucco suggests that housing damage from most affected by this damage. Existing literature characteristics of those surviving households

In this context, we sought to identify the third of the total housing stock.

damaged more than 300 000 homes, almost a in the case of Puerto Rico, Hurricane Maria collapsed housing structure and flying debris, attributable to housing damage, especially by injuries in such natural disasters are often Disease Control and Prevention,⁵ deaths and 3000 injuries.^{1,5} According to the Centers for and extensive flooding, resulting in close to with sustained winds of 100 miles per hour history, made landfall in September of 2017

Hurricane Maria, one of the most dev-

doi: 10.2105/AJPH.2019.305438

This article was accepted October 14, 2019. ordered at ajph.permissions@aphupub.org by clicking the "Reprints" link. Pennsylvania, 3318 Locust Walk, Merion Building, Philadelphia, PA 19104 (e-mail: ma@uic.edu). Reprints can be Correspondence should be sent to Cheryl Ma, PhD, Postdoctoral Fellow, School of Social Policy and Practice, University of Department of Electrical and Systems Engineering, University of Pennsylvania. Cheryl Ma is with the School of Social Policy and Practice, University of Pennsylvania, Philadelphia. Tony Smith is with the

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et al.⁸ focused on the area extent of Hurricane damage severely. For example, Chakraborty damage prevalence and not degrees of have for the most part looked only at overall district level.⁹ In addition, previous studies level,² neighborhood level,^{6,7} and planning studies at the census-tract level,⁴ zip-code questions at the community level (including have for the most part addressed these low-income households. But studies to date higher proportions of renter households or

inspected by FEMA. Of these homes, the statistics for 140 000 individual homes studies both housing and household characteristics published by FEMA,⁸ which in-

Assistance Housing Registrants file for major

METHODS

households with respect to damage severity, attributed to a higher vulnerability of renter whether such income inequalities have con- in Puerto Rico,¹⁰ we sought to determine the historical persistence of income inequalities lower than for homeowners, together with renter households in Puerto Rico tend to be Urban Development,³ that the incomes of finding by US Department of Housing and sets of results. More specifically, given the looked for possible relations between these 2 with respect to damage severity. Finally, we of lower- versus higher-income households severely. Second, we analyzed the vulnerability

305438)

Published online ahead of print December 18, 2019; e1–e7. doi:10.2105/AJPH.2019. standards for low-income housing to reduce risks of severe damage. (Am J Public Health.

Public Health implications. Disaster preparedness policies should raise structural severe home damage.

interaction results suggest that lower-income renters are particularly vulnerable to renters and lower-income households are most vulnerable to hurricane damage. Our

conclusions. These results provide evidence at the individual household level that lower income levels.

..described.. outcomes between renters and homeowners was substantially greater at